THE FINANCIAL STATEMENTS OF NEW ZEALAND 1970-2011

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General Declaration of Originality

This dissertation contains no material which has been accepted for a degree or diploma by the University of Tasmania or any other institution except by way of background information and duly acknowledged in the dissertation, and to the best of my knowledge and belief no material previously published or written by another person except where due acknowledgement is made in the text of the dissertation.

Signed:

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Abstract

The construction and analysis of financial statements for an accounting entity allows its stakeholders to assess its financial position and performance. This is the case for individuals, corporations and countries.

Baydoun et al. (2015) proposed a simplified method in constructing an income statement, a balance sheet and cash flow statement. This study extends their work by modifying and applying their one sector model to estimate financial statements for New Zealand and assess its economic performance between 1970 and 2011. The performance assessment is conducted based upon financial ratios. The findings from the analysis will add to the body of knowledge explaining New Zealand's economic performance and the factors that are influential to the New Zealand economy.

The significant findings of the study are as follows: 1) there has been gradual but economically significant decrease in the rate of return ratios of the New Zealand economy. The factors responsible for the decrease in New Zealand's return ratios are: 1) asset utilisation inefficiency; 2) a significant increase in the gearing ratio of the New Zealand economy, indicating increased financial risk; 3) consumption levels that mitigate against improvements in the return and risk profile of the New Zealand economy.

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Chapter 1 Introduction

1.1 Introduction

Financial statements are official records of the financial actions of an entity over a period of time (Masoud & Badugu, 2015). They show the financial effects of transactions and other events of the reporting entity (IASB, 2010). They include a balance sheet, an income statement and a statement of cash flow (Gibson, 2008; Hasan, 2015).

The balance sheet shows the assets, liabilities and equity capital of an organisation at a particular point in time (IASB, 2012). The income statement measures a company's financial performance over a specific accounting period indicating whether a company has made a profit or loss (IASB, 2012). The cash flow statement shows how changes in the balance sheet accounts and income affect cash and cash equivalents breaking the analysis down into operating, investing and financing activities (Helfert, 2001; Tarantino, 2001).

Financial statements are the key source of information that stakeholders of businesses use in analysing the performance of their entities (van Auken & Yang, 2014). The analysis assists them in making good decisions (Carraher & van Auken, 2013; IASB, 2010; Mitchell et al., 2007; van Auken & Yang, 2014). This study suggests that stakeholders of a nation can benefit from a similar approach if they have access to macroeconomic information structured in the form of financial statements.

1.2 Background to the study

The National Accounts (NAs) are official financial accounts of a country (Lande, 2000). They gather, evaluate and disseminate data on economic activity at the national level (Heun et al., 2015). Thus, National Accounts could be thought of as financial statements at the macro level. National Accounts are the main source of information that stakeholders in a country or region rely on to assess the performance of their countries or regions (Bos, 1992; den Butter, 2007; Jorgenson & Landefeld, 2009;

Kendrick, 2012). Their preparation and presentation is regulated by a standard known as the United Nations System of National Accounts (SNA).

Since their inception, National Accounts (NAs) and the SNA have generated a steady stream of research and commentary across a range of issues including the need for changes to, and extensions of, national accounts (Bos, 2008; Broderick, 1967; Davies, 2015; Lynch, 2015; Richter, 1994; Ruggles, 1987; Sunga, 1988; van Tongeren, 1979). To address issues raised by the research, the United Nations (UN) embarked on a series of revisions of the SNA with 2008 representing the latest iteration. Despite the continuous review of the SNA and National Accounts, shortcomings remain.

The first drawback concerns the use of National Accounts (GDP) as an indicator of welfare and progress (Atkinson, 2008; Boarini & d'Ecole 2013; Cha, 2013; Giannetti et al., 2015). Gross domestic product (GDP) is computed as the summation of all final goods and services produced in a country within a period of time at market prices (Vaghefi et al., 2015; van den Bergh, 2009). It is the key indicator in the NAs and forms the basis upon which a country's performance is assessed (Bulin & Baltatescu, 2015; Syrquin, 2011; UNEP, 2012; van den Bergh, 2009). However, NAs and GDP have been found to be inadequate indicators for measuring a nation's performance for various reasons (Anielski, 2001; Atkinson, 2008; Daly, 1977; Mishan & Mishan, 1967; Nordhaus & Tobin, 1972; Stiglitz et al., 2009; Repetto et al., 1989; Sen, 1976, 1979; van den Bergh, 2009).

Another shortcoming of the SNA is that it is complex (Bos, 2008), focuses on national income statement and not balance sheet computation, although, in theory, it recommends a balance sheet as part of the national accounts of countries (Heun et al., 2015). Such problems account for the intermittent, omissions and incomplete preparation of balance sheets by nations (Ahmed, 2000; Heun et al., 2015; Jorgenson & Landefeld, 2009; Kendrick, 1972; Office for National Statistics, 2012; Stephanie, 2015; Statistics New Zealand, 2014). Other accounting researchers see the problem of NAs from a more micro perspective by recommending structured financial accounts that better reflect micro concepts (Gorter & Shrestha, 2004; Kircher, 1953; Nassimbene, 1954; Yu, 1966).

To address these gaps in the literature, Baydoun et al. (2015) developed a simplified one-sector model and estimated financial statements for UAE. The Baydoun et al. (2015) one-sector model classifies transactions and events into two categories. One category pertains to the five institutions units within the national economy: financial, non-financial, government, household and non-profit institution serving households. The other category represents the 'Rest of the World'. This study modifies their approach and estimate financial statements for the New Zealand economy. It also applies the DuPont framework for financial statement ratios to analyse and assess the economic performance of New Zealand.

Over recent decades, New Zealand's economic growth performance has been judged as being slow by industrialised country standard (Brash, 2001; Group, 2011; Hunt & Conway, 1998; IMF, 2000; McDonalds, 2000). New Zealand's relative position in the OECD appears as being below average (Brash, 2001; Cheung, 2013; Conway & Meehan, 2013; Galt, 2000; Group, 2011; IMF, 2000; McDonalds, 2000; OECD, 2011; NZIER, 2000; Skilling, 2001; Smith, 1990; New Zealand Treasury, 2014). Although New Zealand economic growth improved at times during the period from 1970 to 2011, overall, its performance has been near the bottom of the OECD rankings (Galt, 2000), with little sign of improvement (Cheung, 2013; OECD, 2008).

Several factors have been argued as the possible causes of this slow economic performance (Bayliss, 1994; Borkin, 2006; Carroll, 2012; Cheung, 2013; Conway & Meehan, 2013; Conway & Orr, 2000; Dalziel, 1999; Easton, 1997; Franklin, 1985; Galt, 2000; Gould, 1982; Grimes, 2006; Group, 2011; Hazledine, 1998; Karagedikli & Price, 2012; OECD, 1975, 1983, 1994, 2004; Philpott, 1991; Skilling, 2001). Terms of trade fluctuations and weak productivity growth are most commonly attributed as the main cause of New Zealand's perceived relatively poor economic performance (Conway & Orr, 2000; IMF, 2000). In terms of risk, the New Zealand economy is seen as being vulnerable to its high indebtedness to foreigners (Bedford, 2008; Group, 2011). The gearing ratio of the New Zealand economy stands at around 33% of GDP, one of the highest within the OECD block (Steenkamp, 2010).

Drawing from the ongoing discussion concerning the New Zealand economy and the general limitations of NAs provides a framework to assess the New Zealand's economic performance from a different perspective. Such analysis will assist in understanding the extent to which the economy has performed over the years. Therefore, this study provides an alternative means of assessing the New Zealand economic performance by applying a financial statement analysis approach to interpreting macroeconomic data.

1.3 Objectives and Research Question

The main objective of the study is to estimate financial statements for the New Zealand economy in order to assess its income and wealth. More specifically, it restates macroeconomic data to facilitate an analysis similar to that used in a micro-economic context. Further, the study aims to assess the risk and return profile of New Zealand by applying the DuPont framework for the analysis of financial ratios.

To achieve these objectives, the following research question is investigated in the study:

> Can a financial statements analysis based upon the one-sector model of the New Zealand economy shed new light on its risk and return profile?

1.4 Motivation for the study

One of the motivations for conducting this study emerged from the earlier study done by Baydoun et al. (2015). Their work describes a simple approach of producing financial statements for a nation and other macro-economic entities. Interest thus lies in modifying their approach so that the method could be adopted by nations or region in preparing financial statements. The study is also motivated by views expressed in prior research on the need for other alternative indicators of economic assessment since GDP is inadequate in measuring a nations progress (Anielski, 2001; Atkinson, 2008; Stiglitz et al., 2009; Radermacher, 2015; Yu, 1957; 1959). A further motivation is the divergent views expressed in prior research about New Zealand's economic performance (e.g., Brash, 2001; Group, 2011; Hunt & Conway, 1998; Nahar & Inder, 2002). Interest thus lies in assessing the New Zealand economic

performance from a different perspective compared to that usually undertaken in prior research, to determine how the New Zealand economy has performed in recent years.

1.5 Significance of the study

The significance of this study is that, firstly, it provides a flexible and simple method for constructing financial statements for a macro-economic entity such a nation that can be adopted by other nations or arbitrarily defined macro-regions to facilitate international and other comparisons. Secondly, it will support a common approach to macro-analysis at the country level and thirdly, the outcome of this work will serve as a source of reference in making international comparisons of the income and wealth of different countries.

1.6 Relevant Literature

Research has shown that, despite the continuous review of the SNA to regulate National Accounting (NA), omissions and inconsistencies exist (Bulin & Baltatescu, 2015; Drudy, 2009; Gertner, 2010; Lynch, 2015; Mäler, 1991; Moulton, 2004; Obst & Vardon, 2014; Repetto et al., 1989; van den Bergh, 2009).

Other researchers have also expressed concern about the focus and complexity of the SNA, resulting in intermittent and incomplete preparation of balance sheets by countries and, in many cases their omissions (Ahmed, 2000; Heun et al., 2015; Jorgenson & Landefeld, 2009; Kendrick, 1972; Office for National Statistics, 2012; Stephanie, 2015; Statistics Zealand, 2014; Gorter & Shrestha, 2004; Kircher, 1953; Nassimbene, 1954; Yu, 1966). Several other accounting researchers see the problem of SNA and National Accounting from a more micro perspective (Gorter & Shrestha, 2004; Kircher, 1953; Nassimbene, 1954; Yu, 1966).

To address these gaps in the literature, Baydoun et al. (2015) constructed balance sheet, income statement and cash flow statement with NA and International Investment Position data of the UAE. Their method was consistent with the earlier theoretical work by Kendrick (1972) and Ruggles (1970) and also in line with the SNA (2008), UN (2008) and the accounting relationships set out by the IMF (2010). However,their method depicts business accounting concepts differently from sources such as

the UN's (2000) report that introduced micro-accounting concepts into the SNA framework. The theory of financial statements described by Willett (1991) forms the basis of this work. It was developed originally based on Keynes's description of macro accounting contained in Keynes (1936). Baydoun et al. (2015) is based on a highly simplified one-sector model. The present study follows and refines their method.

1.7 Present study

The present study presents financial statements constructed to show the income and wealth of New Zealand. It also undertakes a DuPont framework of ratio analysis that to assess the economic performance of New Zealand over the period 1970 – 2011.

1.8 Outline of the Chapters in the Dissertation

The remaining chapters of this thesis are organized as follows: A literature relevant to the study is contained in Chapter two. Chapter three provides a description of the New Zealand economy over the period of the study (1970 – 2011). Chapter four describes the theoretical framework underlying the construction of the financial statements. Chapter five details the methods applying the theoretical framework to New Zealand data. Data sources are discussed.

The main results of the study are contained in Chapter six. This presents the financial statements of New Zealand in summary form for each year of the study period. The financial statements are constructed using the methods described in Chapter five. The elements of the financial statements are described and discussed in terms of what they represent about the facts of the New Zealand economy. Chapter seven further discusses the patterns revealed by the financial statements through a DuPont framework analysis of financial ratios. A general overview of the study and its conclusions are presented in Chapter eight, together with the limitations of the study and prospects for future research.

Chapter 2 Literature Review

2.1 Introduction

This study introduces micro accounting concepts into the SNA framework and estimates financial statements for New Zealand. Part of the study also analyses New Zealand's economic performance using accounting ratios. In this chapter literature relating to NAs, the SNA and the metric of GDP is critically evaluated. A general overview on the New Zealand's economic performance since the 1970s is also presented.

2.2 National Accounting (NA) and the System of National Accounts (SNA): Short Historical Review

Sir William Petty's and Gregory King's estimates of British national income in the seventeenth century are usually seen as the first stage in the development of National Accounting (Bos, 1992, 2003, 2006, 2008; Carson, 1975; Cobb, Halstead, & Rowe, 1995; Kendrick,1970,1972; Tily, 2009; Vanoli, 2005). During the same period, estimates of national income were made by Boisguillebert and Vauban in France and it is unclear whether these estimates influenced the way national income was calculated in Britain (den Butter, 2007). However, the estimates of the British national income by Petty (1623-1687) and King (1648-1712) can be regarded as unique in so far as quality and scope are concerned (den Butter, 2007). This was unmatched in the following two centuries (den Butter, 2007). Petty in the first instance, wanted to demonstrate quantitatively that Britain was capable of raising sufficient revenue from taxes to cover its war expenditure (Bos, 2003).

Gregory King (1623-1687) improved the estimates of national income by Petty. King used a broad concept of income and production, similar to what is currently contained in the guidelines of the United Nations. Production comprises the 'economic value added' by the production of both goods and services. The concept used contrasted to the physiocrats, who reasoned that only agricultural products lead to value added and that all remaining production is 'sterile'. Beside the use of a 'modern'

concept of income, King calculated national income in three different ways, as is done today, from the point of view of production, income and expenditure (den Butter, 2007). King did not restrict himself to aggregate total annual income, expenditure and savings, but classified data with respect to social and income groups. He also estimated the national stock of wealth (gold, silver, jewels, houses, livestock etc.). Following the pioneering work of Petty and King, the number of countries producing national accounts gradually increased. By 1900, estimates were available for eight countries: United Kingdom, France, the United States, Russia, Austria, Germany, Australia and Norway (den Butter, 2007). All of Kings estimates were entered in current prices, i.e. valued at prices prevailing in a given year.

A second phase in the development of National Accounts took place with the work of Alfred Marshall, Arthur Bowley, Alfred Flux and Josiah Stamp in the first quarter of the 20th century (Tily, 2009). A third phase originated during the 1930's and 1940's with development marking an increasing technology and sophistication in the preparation of data for National Accounting (Bos, 2003; den Butter, 2007; Vanoli, 2005).

During the later period, the succession of innovations included: the development of social accounting, the invention of modern input-output analysis and the publication of the first international standard on National Accounting (Bos, 1992). This period also produced a revolution in terms of National Accounting concepts and methods (Bos, 2003). Furthermore, the Keynesian revolution in economics and the birth of econometric modelling provided fresh applications of National Accounting and made National Accounting data an important tool for planning and evaluating economic policy. Den Butter (2007), linked Keynes and National Accounting, noting that, his ''General Theory'' in 1936 supported national bookkeeping and marked the beginning of macro-economic analysis.

Keynes contributed to the development of National Accounting through theoretical explanations of economic activity. The theory required an understanding of how measurement of the economy was to be effected. This focused national income measurement on national income accounting, also referred to as the 'accounting approach' (Vanoli, 2005). Keynes' wartime work, *How to pay for the war* was the bedrock of the third phase of the British national accounts development. Tily (2009) sees Keynes

as a theoretician, compiler and user of the National Accounts. Keynes consolidated the theory, and Kuznets, Stone and others put this theory into practice through the construction of a more comprehensive System of National Accounts (Obst & Vardon, 2014).

Many countries now prepare NAs and the data presented has become a common tool for policymaking and economic planning. This has prompted the development of international reporting standards that regulate the preparation and presentation of NA. The UN, through the work done by Stone and Meade, drafted and published the first standard, which was known as the System of National Accounts (SNA). Views on precisely when the first SNA was published vary between 1947 and 1953 (Vanoli, 2005; Bos, 1992; den Butter, 2007; Kendrick, 2012; and Jones, 2000).

2.3 The SNA and NA a brief description

The SNA is an official accounting standard that regulates the preparation of National Accounts (Jorgenson & Schreyer, 2013). Due to its relevance and the role it plays, most economists tend to use metaphors like the " bird's eye view on the economy'' or a 'tool for economic diaphanoscopy' to describe the SNA (Reichmann, 2015).

The system is built around the Keynes description of the economy where national income (NI) is defined as being equal to consumption plus investment plus government expenditure plus exports less imports, generically and almost universally represented in symbols as $Y=C+I+G+X-M$, their respective meaning being clear in this context (Looughlin, 1971; Obst & Vardon, 2014). This is generally interpreted as estimating the income of a nation from three different ways: the income approach, the expenditure approach and the production approach.

Although the system is presented initially as flows, and most implementations of the system routinely only focus on these, conceptually, NA standards incorporate stocks as well as flows. In particular the SNA framework incorporates balance sheets that include produced assets, natural resources and the net positions on the financial assets and liabilities (Obst & Vardon, 2014).

Although the SNA is a detail framework for recording all economic activities in an economic territory, defining a set of concepts and building a full set of accounts based on these concepts, it is faced with shortcomings.

2.4 Shortcomings of NA and SNA

Since the evolution of National Accounting and the SNA, the information they produce has become the basis upon which the most important macroeconomic decisions are made (Bos, 1992; den Butter, 2007; Kendrick, 2012; Landefeld et al., 2010; Wright, 1989). Consequently, stakeholders expect NA to provide all the necessary information relevant for economic evaluation and decision making (Dasgupta, 2015). Nevertheless, as those who work with National Accounts are aware, the NA and SNA face many limitations.

Some see National Accounting occupying its privilege position by default: that is, it is being used because there is nothing better (Repetto et al., 1989). Shortcomings and criticisms of NA occur in three main areas. First is the use of National Accounting (GDP) as an indicator of welfare and progress. Second, is the lack of balance sheet type data and, third, is fuzziness in the relation of macro and micro accounting concepts. This dissertation relates to only the second and third areas of the limitations of NA. The first is mentioned in passing, however, to define the boundaries and limitations of the dissertation.

2.4.1 NA as an indicator of welfare and Progress

In economic analysis, GDP is the key indicator used to measure a nation's economic performance (Almunia, 2007; Boarini & d'Ercole, 2013; Bulin & Baltatescu, 2015; Galt, 2000; Gertner, 2010; Giannetti et al, 2015; Gorica & Gumeni, 2013; Syrquin, 2011). Its rate of change is the basis upon which a nation's economy is typically assessed (Bos, 2006; Bulin & Baltatescu, 2015; Cha, 2013; Syrquin, 2011; UNEP, 2012; van den Bergh, 2009; Wesselink et al, 2007). When the change is positive, it is taken as being 'a good thing' and correlates with progress, welfare and happiness (Gertner, 2010; Giannetti et al., 2015; Hamilton & Dixon, 2003; Wright, 1989). However, in the view of some, National Accounting data and GDP in particular are not adequate measures of welfare and

economic progress (Atkinson, 2008; Boarini & d'Ercole, 2013; Cha, 2013; Giannetti et al., 2015). From this perspective, using GDP as an indicator of the overall performance and wellbeing of a nation can be misleading (Giannetti et al., 2015).

NA and GDP do not take into consideration the reduction in the value of some assets that represent value of welfare (van den Bergh, 2009). Additionally, the value of output of certain public goods, such as the national defence, is based on the cost of their provision, even though it is evident that the costs of public goods do not always, and perhaps even usually, serve as an adequate measure of the benefits associated with these goods (van den Bergh, 2009). Mishan (1967) and Daly (1977) conclude that GDP must be considered as the total value of the costs of economic activities in a nation. Consequently, their actual real welfare effects are unobserved and are not measured by GDP. GDP growth is therefore not an indicator of welfare but reflects the increasing costs of economic activities. Nordhaus and Tobin (1972) also argue that GDP is not a reliable measure of welfare.

The incongruity between GDP growth and real growth in households, sectors and regions of a country reinforces why overreliance on GDP in assessing a nations performance could be misleading (Anielski, 2001). Therefore there is a need to go beyond GDP estimation (Stiglitz, 2009). Giannetti et al. (2015) stress that although there is value in using GDP as an economic indicator, it does not provide a full and reliable appraisal of a country's economic health. Lattimore & Eaqub (2013) acknowledge GDP as an important measure but note its shortcomings. Radermacher (2015) and Cobb et al. (1995) recommend alternative indicators of economic assessment. In a speech delivered by Joaquin Almunia, the former European Commissioner for Economic and Monetary Policy, in Brussels on November, 2007, the need for alternative indicators to complement GDP was noted. Although GDP is an important element in the Baydoun et al. (2015) framework used in this dissertation, the framework allows GDP to be seen in the context of other economic measures and estimates.

2.4.2 Balance Sheet computation in the SNA

GDP relates to only one attribute of complex economic systems. 'No one will assess the performance of an entity by just looking at its earnings. Very important is the balance sheet, which shows the assets

and liabilities. The same goes for a country' (Stigliz, 2005). The balance sheet shows the assets, liabilities and equity capital of an organisation at a particular point in time (IASB, 2012). For the economy as a whole, the balance sheet depicts what is often referred to as the 'national wealth' (UN, 1993). This is computed by summing up a country's domestic non-financial assets in addition to its net claims on the rest of the world (UN, 1993). It is the final account in the SNA framework. However, most countries do not prepare balance sheets as part of their National Accounts due to the complexity and the focus of the SNA (Bos, 2008; Heun et al., 2015).

Jorgenson & Landefeld (2009) and Stephanie (2015) note that a comprehensive balance sheet for the US economy is absent from its National Accounts. Group (2011) and Statistics New Zealand (2014) state that a 'balance sheet is not prepared as part of the National Accounts of the New Zealand economy'. The SNA has been said to focus on flow accounts of the NA and do not give adequate attention to asset accounts, although it includes balance sheets as part of its system (Heun et al., 2015). Balance sheets have been ignored by most countries in their NAs (Wright, 1989). New Zealand is of no exception as it's omits balance sheets from most of its National Accounts.

Financial statements show the flow and stock aspects of all transactions of an accounting entity during a given interval of time and at its finish. Flow accounts are contained in the income and cash or funds flow statements, while stocks are shown in the balance sheet. Both accounts are linked, in that flow concepts are related to the differences between stocks and stocks are related to accumulations of past flows (Dasgupta, 2015; Repetto, 1992). A financial analyst does not assess a firm's performance and long term viability without both (Wright, 1989). A complete balance sheet is a key object of study in both economic sustainability and policy analysis (Dasgupta, 2015).

Economic sustainability in the narrow sense relates to what accounting theory refers to as the 'capital maintenance assumption'. This requires income to be assessed on the condition that opening asset values are treated as a cost (Lange, 2013). Such economic evaluation and monitoring cannot be done with the national income flow accounts alone. A balance sheet is also required. According to Lange (2013), using national income flow accounts as a measure of sustainability is inappropriate. An

income statement alone cannot be used to monitor and evaluate a nation's economic performance (Stiglitz & Charlton, 2005; Yu, 1959).

Repetto (1992) examines the National Accounts of Costa Rica between the period 1970 -1989. He argues that the failure of the Costa Rica government to prepare a complete balance sheet to monitor its investment contributed to the country's poor economic management in the 1980s. Baydoun et al. (2015) construct financial statements including the valuation of natural resources, to assess the sustainable wealth of UAE. They argue that a comprehensive and structured national balance sheet and income statements are key elements in assessing a nation economic performance. Ding et al.(2014) analyses cross-country experience in reducing net foreign liabilities, with a focus on the relative contributions from the domestic sectors. They consider a consolidated balance sheet of a nation to be an important tool in assessing its financial vulnerability. Yu (1959) observe that a national balance sheet and income statement are necessary to compute financial ratios.

A complete balance sheet is thus important in any comprehensive financial statement analysis. The SNA needs to incorporate balance sheet accounts, since the income statement alone is inadequate in monitoring and evaluating a nation's economic performance (Yu, 1957).

2.4.3 NA and Micro-Accounting Concepts

Accounting is the art of recording, classifying, summarising and interpreting economic and business transactions of accounting entities (Yu, 1957). It is applicable to both macro and micro levels of data. Traditionally, accounting is classified into micro accounting and macro accounting (Lande, 2000; Stanton & Stanton, 1998; Yu, 1957; 1966). While there are many conceptual similarities between these two different forms of accounting, differences exist in the intellectual cultures of those using the information they provide. Micro accounting concerns the application of accounting principles to the economic transactions of individual business units, proprietorships, partnerships and companies (Yu, 1957). Macro accounting concerns the application of accounting principles to highly aggregated regional and national economic activities (Yu, 1957; Jones, 2003; Keuning & Tongeren, 2004; Utsunomiya, 2003).

Conceptually, both types of accounting are part of a single system of accounting varying in their level of consolidation (Willett, 1991). NA data is the consolidated and combined transactions of the micro units. However, in practice, due to differences in their historical origins, NA and micro accounting appear to be distinct from each other in the way some concepts and aspects of structure are interpreted (Lande, 2000; Stanton & Stanton, 1998). Sometimes this results in each system giving conflicting figures (Stanton & Stanton, 1998). Stanton & Stanton (1998) argue that such conflicting figures affect stakeholders' ability to make good decisions. Kilani (1988) suggest that the difference in concepts and structure between NA and micro accounting are due to NA being based on economic theory. However, Gorter & Shrestha (2004) argue that since the SNA framework is a combination of both micro accounting principles and economic theory, the framework should be extended to include more concepts based on micro-accounting principles.

Kircher (1953) examines the consistency of accounting entries in national income computation. He suggests that the more the methods used in generating National Accounts estimates are brought into line with those of the business enterprises, the more confidently the reports would be used by stakeholders. A particular problem is that relating macro accounting estimates to transactions at the micro level in the current system is difficult, due to lack of evidence as to the reliability of the estimates.

The UN (1993) indicated that both accounting systems needs to reflect the same concepts, definition and classification to facilitate data comparisons. Stanton & Stanton (1998) express a similar opinion. These considerations suggest the need for both systems of accounting to be integrated. This study addresses this matter, by introducing micro accounting concept into the SNA framework by modifying and applying t Baydoun et al. (2015) one-sector model.

2.5 Converting the SNA concepts to business-accounting concept

Baydoun et al. (2015), create a method that requires minimal data to produce a country's financial statements in other to assess its economic performance. Their method introduces business accounting

concepts into the SNA framework and their financial statements reflects business enterprises mode of presenting financial statements.

Their theoretical framework provides a definition of financial statements and related elements such as assets while the consolidation process enables financial statements for an aggregated entity to be prepared. Their method corresponds to the one-sector concepts of national entities in (Lane & Milesi-Ferretti, 2007) study of the external wealth of nations. It proposes that a nation can be regarded as an accounting entity similarly to a business entity.

Preparing financial statements according to Baydoun et al. (2015) is a process of consolidation, and that the SNA framework is translated to reflect business accounting concepts. They used the UAE as a case study of the application of their theory. A balance sheet, income statement, and funds flow statement was constructed from NA and IIP data and used to assess the UAE's rate of return on assets and investment in natural resources. This study modifies and applies their method to construct financial statements for New Zealand in order to assess its income and wealth. Part of the study also analyse New Zealand's performance using financial ratios.

2.7 Conclusion

The literature review has covered a brief historical review of NA and an explanation of the SNA and its limitations. Drawing from views expressed by prior researchers on the limitations of National Accounting shows the need for a more structured, financial accounting approach to the presentation of data for macro-economic analysis. This dissertation addresses this need by reorganising macro accounting data in the form of financial statements and using accounting ratios to assess the economic performance of New Zealand over the period 1970 – 2011. The next chapter briefly reviews the chronology of the main economic events occurring in that period.

Chapter 3 The New Zealand Economy 1970 - 2011

3.1 The New Zealand Economic Performance

This chapter reviews New Zealand's recent economic history and economists' interpretations of its economic performance. This is used later to assess the usefulness of reconstructing financial statements for New Zealand. The Chapter consists of Sections dealing in chronological order with events in the 1970s, 1980s, 1990s and the period from 2000 - 2011.

3.2 Economic Performance during the 1970s

During the early 1970s, particularly between 1972 and 1973, GDP grew at an annual average rate of about 4% (IMF, 1982; OECD, 1975). This rate of growth was above the OECD average (OECD, 1975).

Economists attribute this strong growth to a rise in productivity and improvement in terms of trade (Conway & Orr, 2000; Lattimore & Eaqub, 2013; OECD, 1975; Skilling, 2001). The terms of trade improved by about 50%, mainly as a result of the world market price increase for New Zealand products (OECD, 1975). The increase in productivity was measured as total factor productivity (TFP). TFP depicts the efficiency with which labour and capital combine to generate outputs. According to OECD estimates of the average annual percentage change in TFP, New Zealand TFP grew on average at 1.6% between 1960 and 1973 (see Galt, 2000). This figure was the highest OECD estimate of TFP for New Zealand from 1960 - 1997.

The strong growth resulting from these two sources, coupled with stability in the economy indicated by the main macroeconomic indicators in this early period resulted in a current account surplus of about 3.6 to 3.7% of GDP (IMF, 1982; OECD, 1975). This lead to a paying off of most outstanding New Zealand debt (OECD, 1993).

In 1974 the New Zealand economy entered a recession (OECD, 1975, 1976, 1977, 1979; Skilling, 2001; New Zealand Treasury, 2006). This was part of a worldwide economic recession due to global events. It led to a fall in New Zealand's terms of trade resulting from the collapse of the world market price for its products (Lattimore & Eaqub, 2013; OECD, 1975; Skilling, 2001; New Zealand. Treasury, 2006). The rise in oil prices on the world market also was a factor (Lattimore & Eaqub, 2013; Lattimore et al., 2009; New Zealand Treasury, 2006).

Productivity also decreased (OECD, 1975, 1976). The cause of the decline in productivity was attributed to a drought and capacity constraints that affected both the agricultural and the manufacturing sectors (OECD, 1975, 1976). These caused a fall in total domestic income, pushing the current account into a deficit. The current account deficit rose to about US0.7 billion (OECD, 1975). This was approximately 14% of GDP, according to Conway & Orr (2000).

Growth picked up again in 1975 and 1976 due to a rise in agricultural output, resulting from increasing overseas demand (OECD, 1976). The terms of trade continued to deteriorate in 1975 (Conway & Orr, 2000; Skilling, 2001) but improved in 1976 as a result of the rise in price for wool on the world market (OECD, 1975).

The economy entered another recession in 1977, with GDP decreasing by 2.1% (OECD, 1979). Again, a factor in this was deterioration in the terms of trade. However, it was made more severe as a result of policy tightening by the New Zealand government (OECD, 1979, 1980). Such measures were taken in an attempt to address the macroeconomic imbalances in the economy, particularly the current account deficit.

Economic growth in GDP improved during 1978 and 1979 due to improvement in both productivity and terms of trade. The improvement in TFP was mainly due to an increase in overall output.

Lawrence & Diewert (1999) estimate New Zealand TFP from 1972 to 1998 to be between zero percent in the mid-1970s and about 1.4% during 1979 and 1997. This pattern of a rise in productivity in 1979 took place at the same time that the terms of trade improved from the previous year. International market prices for New Zealand's products and thus its terms of trade were volatile

during the 1970s, which is given as a cause of the subdued News Zealand growth in that decade (OECD, 1979; Smith & Grimes 1990; New Zealand Treasury, 2006).

3.3 Economic performance during the 1980s

Economic performance in the 1980s started on a slow path as GDP decreased by 0.3% in 1980 compared to 1979's increase of 1.2% (OECD, 1980). The cause of the decline in growth was attributed to a fall in domestic activities. According to OECD (1980), the decline was a result of the impact of the late 1979 oil shock arising from the Iranian revolution and the Iran-Iraq war. Growth, however, picked up again in 1981 with real GDP increasing by 3%, mainly due to a rise in government investment (OECD, 1981).

The 1981 growth was short lived as the economy entered a recession from 1982 - 1983 with GDP decreasing by 1% during the period (OECD, 1983, 1985). The reason given for the fall in growth was as a result of fluctuation in world demand for New Zealand products. The OECD (1985) noted that domestic policy tightening was also a cause of the decline in growth. This reduction in growth led to a further deterioration in the current account deficit and the debt position. The current account deficit to GDP ratio increased to 6% according to the OECD (1985) while others (Bale & Dale, 1998) estimated that the current account deficit rose to 9% of GDP. The OECD's (1985) calculated New Zealand's debt to GDP ratio increased to 58% at this time.

The New Zealand government responded by implementing structural reforms of the economy in 1984. The main goal of the reforms was to address the macroeconomic imbalances through improved and sustainable economic growth (OECD, 1993). They also sought improvements in economic efficiency by subjecting economic agents to competition with less interference from government (Quigley, 1996). The reforms were carried out in all the sectors of the domestic economy (Aberbach & Christensen, 2001). Evans et al. (1996) and Henderson (1995) note that they were extensive compared to reforms undertaken by other OECD countries. An objective was to reduce the relative size of the public sector in the New Zealand economy to produce a more efficient resource allocation among sectors of the domestic economy (OECD, 1985).

Real GDP increased by 4% in 1984. Evans et al. (1996) concluded that economic performance improved during the early period of the reforms. However, others, such as Dalziel (1999) disagreed. Despite real GDP improving in 1984, however, some key economic indicators worsened. The current account to GDP and debt to GDP ratio increased to 9% and 73% respectively as at the end of the year (Lewis et al, 1996; OECD, 1990). The rise in these indicators was largely due to increased interest payments and government expenditure. Subsidies and reliefs were provided to support the agricultural sector due to the unstable nature of commodity prices on the world market at this time (OECD, 1985, 1990).

GDP increased slightly in 1985 and 1986 due to increases in output and improvement in the terms of trade. However, growth declined between 1987 and 1989. This was argued to be due partly to output stagnation resulting from the impact of the market reform and partly to the 1987 global equity market shock (Bascand & Humphries, 1988; Brash, 2001; Briggs, 2003; Evans et al., 1996; Hodgetts, 1989; OECD, 1989, 1990; NZIER, 2000).

Despite the effect of the share market crash and the structural adjustments on growth, the current account deficit improved from 9% of GDP in 1984 to 2% by 1988. Gross debt also improved from 73% of GDP to 60% of GDP. The cause of the reduction in the deficit was in part due to lower levels of imports. A significant contribution was made by improvements in the terms of trade. Structural reform was also argued to begin to have an impact at this time (OECD, 1990). Debt reduction was assisted by exchange rate appreciation (OECD, 1993). Debt refinancing and debt repayments also had an impact on the overall position of the economy (OECD, 1989). Having improved in 1988, the current account deficit widened to 4.4 % at the end of 1989. However, external debt remained stable.

3.4 Economic performance during the 1990s

The New Zealand economy entered a recession during 1990, which intensified in 1991 (Buckle et al. 2002; Conway & Meehan, 2013; Galt, 2000; Kelsey, 2015; OECD, 1993, 1994, 2004). The cause of the recession was attributed to the delayed impacts of the 1987 global equity market shock and weaknesses in the 1984 market reforms (Evans et al., 1996). The recession brought a slowdown in

economic activities and caused productivity decrease. The terms of trade also moved against New Zealand with the effect that GDP fell in 1990 and 1991. GDP declined by about 1.8% between 1990 and 1991 (OECD, 1994).

The government launched another series of structural reforms during 1990 and 1991.The reforms this time centred on addressing labour-market rigidities and curbing rising government expenditure. These changes were considered to be the cause of GDP rising in 1992 (OECD, 1994). Although growth rose in 1992, the rate of growth was modest due to low output growth resulting from an unstable energy supply (OECD, 1994). Despite the energy challenges that existed during 1992 and 1993, growth nevertheless improved in 1993. Growth was driven by the rise in demand for New Zealand products on the world market. Exports and productivity increased and the terms of trade improved (Grimes, 2006).

Increased GDP growth continued in 1994 (5.5%) mainly as a result of the rise in productivity but with terms of trade improvement also playing a part, according to the OECD (1996). However, the current account deficit widened to about 2.3% of GDP and debt also rose to 63% of GDP. Growth fell in 1995 and 1996 in the presence of monetary policy tightening by the New Zealand government. This was effected apparently on the belief that the New Zealand economy had reached full capacity in 1994 and its further expansion would result in unacceptable levels of inflation (OECD, 1996). The monetary policy of the Reserve Bank over this time was to keep inflation at a low rate (OECD, 1996).

The lagged effect of the changes in monetary policy probably led to a further slowdown in economic activities in 1997 and 1998. The slowdown was worsened by the Asian financial crisis (Briggs, 2003; Buckle et al., 2002; Conway & Meehan, 2013; Lattimore & Eaqub, 2013; OECD, 2000, 2004). Bad weather conditions also had an adverse economic impact at this time (Conway & Orr, 2000; OECD, 1999, 2000; New Zealand. Treasury, 2006). This period was classified as one of economic uncertainty and associated with a fall in productivity, worsening terms of trade and a decrease in GDP (Conway & Meehan, 2013). At this point the economy was classed as being in recession (Conway & Orr, 2000; Karagedikli & Price, 2012; OECD, 2000).

GDP increased in 1999 by 6% (OECD, 2000) contemporaneous with better terms of trade reflecting the impact of recovery in the Asian economies. Improved productivity and favourable weather conditions also occurred at this time in conjunction with a positive movement in the current account (OECD, 2000).

3.5 Economic performance from 2000 to 2011

New Zealand economy entered an economic recession in early 2000 with GDP decreasing by about 2% (OECD, 2002). The recession was associated with a slowdown in global economic activities (OECD, 2002). Economic activities then picked up in 2001 due to a rise in domestic and external demand. Productivity and terms of trade improved with a rise in GDP (OECD 2002,2004). GDP rose by about 2.4% (OECD, 2002). Despite an increase in economic activities around the world, GDP fell in 2002 and only increasing in 2003, reflecting a slow response to global economic conditions.

The improvement in the world economies from 2003 through to the Global Financial Crisis (GFC) in 2007 was associated with an improvement in the main macroeconomic indicators. Real GDP increase up until the end of 2007. Real GDP growth ranged between 2.7% and 4.5% during 2003 to 2007 (Treasury, 2004). With most of the rest of the world, the New Zealand economy experienced another recession in 2008 and 2009 (Bollard, 2010; Group, 2011; Karagedikli & Price, 2012; OECD, 2011; SteenKamp, 2014; New Zealand Treasury, 2012). After the global recession GDP increased in 2010, partly due to improved terms of trade (Bollard, 2010; OECD, 2011). Higher growth was accompanied by a reduction in the current account deficit. The deficit declined from 9% of GDP in 2009 to 3% of GDP in 2010 (OECD, 2011).

In 2011, growth declined because of the impact of the earthquakes that struck Christchurch in 2010 and 2011 (IMF, 2011; OECD, 2011, Luu, 2015) . The current account deficit rose to 4% of GDP (IMF, 2012).

3.6 Conclusion

This Chapter has presented a brief overview of the economy of New Zealand. This forms the context for the financial statement analysis in Chapter 7.

Chapter 4 Theoretical Framework

4.1 Introduction

This chapter explains the theoretical framework underpinning the estimated national financial statements for the New Zealand economy using NA, Balance of Payment and International Investment Position data. The accounting concepts underpinning the estimated financial statements originated in Keynes (1936, Appendix to Chapter 6).

The framework is based on an accounting measurement theory (Willett, 1987, 1988, 1991; Gibbins and Willett, 1997). The basis of the measurement framework is described in the next section. Baydoun et al. (2015) apply this theory in a simplified manner in the context of a one-sector model. This model has been developed further in preparing the financial statements for New Zealand from 1970 to 2011 in this thesis. The estimated financial statements are used to conduct a systematic analysis of financial ratios to assess the economic performance of New Zealand within the study period.

4.2 Basis of Macro-economic Accounting

The macro-economic accounting system developed by Keynes (1936) is based on the bookkeeping identity

$$S_t = F_t + U_t + P_t \qquad (1)$$

Where S_t is sales during period$t$, F_t is factor cost during$t$, U_t is user cost in t and P_t is profit in t.

Factor Cost and Profit denote 'return to labour' and 'entrepreneur's profit' respectively.

All costs are current cost in Keynes theory. We infer from equation (1) that,

$$U_t = S_t - (F_t + P_t) \qquad (2)$$

Re-arrangement of (1) gives:

$$F_t + P_t = S_t - U_t \qquad (3)$$

The third equation provides the basis for the arithmetic underlying the computation of national income. The equation further shows the extent to which income is connected to the capital assets that generates it. The reasoning behind the SNA can be found in equation (3) and its method of income computation is in line with Hicks (1946) definition of income. Hicks (1946) explains that income should be computed after taking into consideration the value of capital at the beginning of the accounting period. Such a principle of income computation is consistent with the International Financial Reporting Standards (IASB, 2012).

4.3 The SNA framework

The SNA is a macro accounting system that concerns how to compile measures of economic activity in accordance with accounting conventions based on economic principles (Davies, 2015; Jorgenson & Schreyer, 2013; Stephanie, 2015; United Nations, 2008). The system has its foundation in Keynes' bookkeeping identity described above.

The SNA classifies the economy into five sectors (non-financial, financial, general government, household and non-profit institutions serving households) and presents, for each sector, its economic activities in a series of sector accounts (Keuning & Tongeren, 2004). The framework (SNA, 2008) is structured in such a manner to show the relationship among the main economic aggregates of value added, national income, national disposable income, consumption and national savings and how these are distributed among the various institutional units or sectors within the domestic economy. The system starts with the current accounts and moves through accumulation accounts, revaluation and other changes in the volume of asset accounts, to reconcile the changes in assets and liabilities during the accounting period in a balance sheet (UN, 2003).

The current account records transactions in flows. Its starts with 'production account' and contains the initial computation of value added. The value added is the balancing item in the production account and is the opening item of the generation of income account.

The generation of income account depicts how value added is distributed to labour, capital and government (UN, 2015). The balancing item in the generation of income account, referred to as 'operating surplus or mixed income', becomes the opening balance in the primary distribution of income account. The primary distribution of income account records all the property income receivable and payable among the various sectors of the domestic economy, including compensation and taxes receivable by household and government. The balancing item in the primary distribution of income account is what is referred to as 'national income' or balance of primary income (UN, 2015), which is the opening balance in the secondary distribution of income account.

The secondary distribution of income accounts covers the redistribution of income through current transfers made in kind by the government and the non-profit institutions serving household (NPISH) sectors to the household sector. The accounts record also current taxes on income, wealth and other current transfers except social transfers in kind. Its balancing item is known as 'national disposable income'.

The disposable income account is the last of the 'current' accounts. It records how disposable income is spent on final consumption. This account is prepared for the government, household and the NPHIS sectors, since the business sectors do not undertake final consumption. In addition, the account records household and pension funds, an adjustment item for change in pension entitlements. The closing balance for the current account is the 'national savings' (UN, 2015).

The 'capital' account is the first of two accumulation accounts. Its opening balance is the savings figure from the current account. The capital account shows the value of savings and capital transfers used to finance capital formation. The closing balance therefore represents the net lending or borrowing requirement from the rest of the world.

The financial account is the second accumulation account and records the financial flows among the various sectors of the domestic economy. It shows changes in financial assets and liabilities of the sectors with the closing balance representing net lending or borrowing from the rest of the world, reconciling to the closing balance in the capital account.

The SNA at this point creates the 'revaluation and other changes in volume of asset accounts' that record changes in assets and liabilities resulting from factors, such as price movements and natural disasters that do not originate in actual transactions.

The final account of the sequence of accounts in the SNA (2008) framework is the balance sheet (Keuning & Tongeren, 2004; UN, 1993, 2000, 2015). The balance sheet shows the financial position of the economy. It records the assets (non-financial and financial) and liabilities of the domestic economy. The closing balance of the balance sheet is the net worth, or 'capital', representing the difference between assets and liabilities (UN, 2015). A simplified version of the SNA (2008, Annex 2) framework, showing the sequence of accounts is given in Table 1.

		TRANSACTIONS	***OTHER FLOWS***	***STOCK***
Current Account	Production Accounts	***Production of goods and services, as well as the generation, distribution, redistribution and use of income accounts***		
	Generation of income Accounts			
	Allocation of Primary Income Accounts			
	Secondary Distribution of Income Accounts			
	Use of Income Accounts			
Accumulation accounts	Capital Accounts	Net acquisition of non-financial assets, savings and capital transfers		
	Financial Accounts	Net acquisition of financial assets and net incurrence of liabilities		
	Other changes in volume of assets accounts		**Other changes in the volume of non-financial assets, financial assets and liabilities**	
	Revaluation		**Holding gains and losses in Non-financial assets, financial assets and liabilities**	
Balance sheet				**Non-financial assets ,financial asset s, liabilities and net worth as a balancing figure**

Table 1: Sequence of account in the SNA (2008) framework

Source: UN 2015, Financial Productions, flows and stock in the system of National Accounting, Series F, No.113

In addition to the SNA framework, the UN standard adds the external account to the framework to record transactions in asset and liabilities between the domestic economy and the rest of the world. Such information is sourced from the Balance of Payment (BOP) and the International Investment Position data (IIP) prepared by the IMF and the World Bank respectively (UN, 2015).

In the BOP current account, the trade balance is equal to the difference between exports and imports of goods and services. The current account shows changes in assets and liabilities whereas the IIP measures the total value of financial assets and liabilities with the rest of the world at a point in time. The gross savings in the IIP are reconciled to export and import as shown in equation (4),

$$\Delta IIP = export - import + transfers \qquad (4)$$

The SNA framework shows various similarities between it and micro-economic accounting. For instance, the progression of the calculation and distribution of value added through a series of T-accounts, where 'uses' are shown on the left column (Dr) and 'resources' on the right column (Cr), through to changes in asset and liability accounts and finally to balance sheet, is familiar to any financial accountant. As with financial accounting arithmetic, the value of resources and their uses measured in monetary terms is equal. The use of the accrual system for recording transactions in the SNA follows the same principle employed in recording transactions as in the micro economic accounting system (Keuning & Tongeren, 2004; Lande, 2000; Stanton & Stanton, 1998; UN, 1993, 2000, 2015). Both systems record transactions by adopting the double entry principle, although the macro-accounting version is sometimes referred to as 'quadruple' rather than 'double' due to the need to balance real flows and financial flows explicitly (Lande, 2000; UN, 1993; Yu, 1966). The distinction between revenue and capital is the same in principle between the SNA and micro economic accounting system (UN, 2000; Yu, 1966).

Although the SNA is similar to micro or business accounting, certain differences exist between the two accounting systems. One such difference is the manner in which national income and business

income are estimated. For instance, certain types of personal income which are imputed in national income are ignored in business profit under IFRS (UN, 2000). Also, most numbers in the SNA are based on estimates and imputations rather than on directly observable measures of transaction costs as in business accounting (Yu, 1966). Again, depreciation is based on calculations mostly involving actual costs in micro-accounting, whereas 'capital consumption' in the SNA is based on the current cost of fixed assets (UN, 2000). The depletion of natural resources which is shown in the 'other changes in volume' in balance sheets in the SNA is usually treated as part of the cost of goods and services sold in the production account in micro accounting (UN, 2000). However, despite these differences, almost all the concepts underlying income and wealth in micro accounting have their counterparts in the SNA (Table 2)

Business Income Statement/Balance Sheet	**SNA Accounts**
Cost of goods sold	Intermediate consumption/compensation of employees/part of value added
Operating expenses	Intermediate consumption/ other taxes on production/current transfer/compensation of employees/part of value added
Other Incomes	Property Income/secondary output/Revaluation in balance sheets/current transfer
Other expenses	Property Income/secondary output/Revaluation in balance sheets/current transfer
Taxes on Income	Current transfer
Extra ordinary Items	Current/Capital transfers/Revaluation in balance sheet
Dividend Payable	Property Income
Additions to retain earnings	Part of operating surplus
Current assets	Financial asset/Produced fixed asset
Property, Plant and equipment	Produced fixed asset
Land and natural resources	Non-produced fixed asset
Other long term assets	Financial asset/Non-produced/Produced assets

Table 2: The link between micro accounting and national accounting

Source: UN 2000, Links between business accounting and national accounting, Series F, No.76

4.4 Basis of Micro-economic Accounting

An accounting system similar to that just described above can be designed for a nation by adopting Baydoun et al's (2015) model. The accounting measurement theory underpinning their work is described in Willett (1987, 1988, 1991) and Gibbins and Willett (1997). In this theory, two structures describe the fundamental accounting measurement of economic phenomenon, one concerning the debt created by transactions and the other concerning input–output relations in production. Putting both together provides a database of 'activity costs'. The 'activity cost' is fundamental to the recognition of transactions and accounting quantities (Gibbins & Willett, 1997). In the framework for real assets (See Tables 3 and 4), production relations match transaction costs, resulting in the cost aggregation defined as "activity cost". This leads to the activity cost representation theorem, such that a firms financial state can be represented as a set of additive, dated activity cost (Gibbins & Willett, 1997). The theory is a 'representational' theory of accounting measurement (Krantz et al, 1971).

The framework allows one to define 'financial statements' that include a balance sheet, income statement and cash flow statement. Assets, liabilities, equities, revenues and expenses, the elements of financial statements, are also defined so that their values obey the usual rules of accounting arithmetic, including the balance sheet identity 'asset less liabilities equal equities. Additionally, there exists a 'consolidation' operation, which enables the financial statements of a nation to be formed by aggregating the activities of the micro units within the nation. This accounting logic supports the conceptual process of aggregating the micro-economic units of a nation into consolidated national financial statements. These contain the same elements and comply with the same arithmetic rules, as do the micro-economic units from which data are derived.

Within the real assets and activities framework summarised in Tables 3 & 4, in this dissertation, transactions and events are classified into two categories. One category pertains to the five institutional units within the national economy: financial, non-financial, general government, household and non-profit institutions serving households (NPISHs). The 'Rest of the World' represents the other category. The model for New Zealand in this dissertation is referred to as a 'one sector' model. This model corresponds to the concept of the external wealth of nations model in Lane

and Milesi-Ferretti (2007). The nation corresponds to the concept of the accounting entity in business accounting.

Complete Production and distribution accounts					
					Equity(savings) net
Balance at t-1	Negative equity (savings) net		Balance at t-1		
Prior years adjustment for accumulated depreciation			Prior years adjustment for accumulated depreciation		
					Negative equity(savings) gross
Balance at t-1	Equity (savings) gross carried forward		Balance at t-1		
Expenses	Market output		Revenues	Market Output	
Expenses	Output for own final use		Revenues	Output for own	
Imputed	Non-market output		Imputed	Non- market output	
Expenses	Intermediate		Revenues	Intermediate	
				Taxes and subsidies	
	Value subtracted		Value added		
Expenses	Wages				
	Taxes and subsidies on products				
Expenses	Other taxes and subsidies on production				
Imputed	Mixed income				
	Operating loss		Operating surplus		
			Revenues	Wages	
Expenses	Interest		Revenues	Interest	
Expenses	Dividends		Revenues	Dividends	
Expenses	Rent		Revenues	Rent	
Expenses	Taxes		Revenues	Taxes	
			Imputed	Mixed income	
	National loss		National income		
Expenses	Current transfers		Current transfer		
	Loss		Disposable income		
Expenses	Consumption expenditure				
				Changes in pension	
Expenses	Change in pension entitlements		Revenues	entitlement	
	Dis-savings		Savings		
Balance at t-1	Negative equity (savings) gross brought forward		Balance at t-1		
Expenses	Capital transfers		Revenues	Capital transfer	
Imputed	Revaluation adjustments		Imputed	Revaluation adjustments	
			Imputed		
Imputed	Other changes in volume		Other changes in volume		
			Balance at t		
Balance at t	**Equity (savings) gross carried forward**		**Negative equity (savings)**		

Table 3: Complete Production and distribution accounts (Baydoun et al., 2015)

The financial dimensions of economic activities are shown in other accounts reflecting the flows between, e.g. receivables and payables, equity instruments, debt instruments and currencies and gold. These flows are additional to the transactions analysed in the real accounts in Tables 3 and 4 and are the reason why some macro-accountants refer to a 'quadruple' entry system.

The balance sheet shows the assets, liabilities and equity capital of an organisation at a particular point in time (IASB, 2012) . It presents a view of the business as a collection of resources or assets belonging to a corporation that is equal to the total sources of, or claims against these assets at a particular date, similar to the idea of a national balance sheet (UN, 2000). The latter provides information on the total asset and liabilities of an economy (UN, 2003). It also discloses what economists refer to as 'stock' of assets.

Incomplete Produced and non-produced fixed assets					
Balance at t-1 Prior years adjustment for accumulated depreciation	Fixed assets (net)		Balance at t-1 Prior years adjustment for accumulated depreciation		
Balance at t-1	Fixed assets (gross) carried forward		Balance at t-1	Fixed assets (gross) carried forward	
Purchases	Market output		Sales	Market output	
Purchases	Output for own final use		Sales	Output for own final use	
Purchases	Non-market output		Sales	Non-market output	
Purchases	Intermediate		Sales	Intermediate	
Purchases	Acquisitions less disposals of non-produced assets		Sales	Acquisition less disposal of non-produced assets	
Balance at t-1	Fixed assets (gross) brought forward		Balance at t-1	Fixed assets (gross) brought forward	
Imputed	Revaluation adjustments		Imputed	Revaluation adjustments	
Imputed	Other changes in volume		Imputed	Other changes in volume	
Balance at t	Fixed assets (gross) carried forward		Balance at t	Fixed assets (gross) carried forward	

Table 4: Incomplete Production and non-produced fixed asset (Baydoun et al., 2015)

In the computation of the balance sheet, financial assets and non-financial assets are classified separately. Non-financial assets include produced non-financial assets (fixed assets, inventories and valuables) and non-produced, non-financial assets (natural resources). Financial assets and liabilities

comprise items such as gold and SDRs, currencies and deposits, debt securities, loans, financial derivatives and equities (SNA 2008, Annex 2).

The income statement measures an accounting entity's financial performance over a specific accounting period indicating whether it has made a profit or loss (IASB, 2012). The cash flow statement shows how changes in the balance sheet accounts and income affect cash and cash equivalent and breaks the analysis down to operating, investing and financing activities (Helfert, 2001). Both statements disclose economic 'flows' whether the accounting entity is a business or a nation (Baydoun et al. 2015).

The three statements: balance sheet, income statement and cash flow or funds flow statement, are the basis of most financial statements analysis. Their elements: revenue, expenses, assets, liabilities and equities are aggregated by the process of consolidation. Applying these concepts to a nation by consolidating the accounts of the entities within the geographical boundaries of a nation results in the consolidated financial statements of the nation concerned.

4.5 Conclusion

This chapter of the thesis has described the theoretical framework or theory that forms the basis of the estimation of the financial statements for the New Zealand economy. The method application of the theory is described in the next chapter.

Chapter 5 Method and Data

5.1 Introduction

This chapter provides a description of the methods used to apply the theoretical framework described in the previous chapter and sources of data. The next sub-section explains how the study constructs and analyses the financial statements for a country. The following sub-section describes the variables considered and the various data sources.

5.2 Applying the Theoretical Accounting Framework

Applying the theoretical framework to the affairs of a nation in this study follows and refines Baydoun et al. (2015). Baydoun et al (2015) used the one-sector model and analysed the impact of natural resources on the rate of returns of the UAE. This study modifies and applies the framework to construct financial statements for New Zealand. A financial statement analysis of the rates of return using the DuPont Model is also undertaken.

The financial statements for the New Zealand economy will be estimated in current price. The current price is the actual price of the reporting date, denoting current cost. Additionally, it also reflect the original cost or the "historic" cost as in business accounting terminology.

The financial statements for New Zealand from 1970 -2011 are constructed using the format in Tables 5, 6 and 7.

Balance Sheet

The balance sheet is prepared using the format indicated in Table 5. In the Table, '$t-1$' represents the opening balance sheet date in each year. The values at '$t-1$' for 1969 are estimated and then for the subsequent years '$t-1$' is the balance sheet at the opening of period 't' referred to as the closing balance sheet. The opening balance sheet ('$t-1$') estimates are added to the change in the estimates

during the period to obtain the values at 't'. The 'change' column in the Table denotes the basis of the change in estimates of the balance sheet items between'$t-1$' and 't'.

Balance Sheet

Item	Balance sheet t-1	Change	Balance sheet t
Produced fixed assets at current values (gross)	Calculated	Data on transactions	Calculated
Inventories	Calculated	Data on transactions	Calculated
Investment	**Calculated**	**Data on transactions**	**Calculated**
Financial assets			
Accruals(Account Receivables)	Balances	Calculated	Balances
Currencies(foreign reserve including gold)	Balances	Calculated	Balances
Debt(portfolio debt and other investment)	Balances	Calculated	Balances
Portfolio equity	Balances	Calculated	Balances
Foreign direct investment	Balances	Calculated	Balances
Financial derivatives	Balances	Calculated	Balances
Financial liabilities			
Accruals(Account Payables)	Balances	Calculated	Balances
Debt(portfolio debt and other investment)	Balances	Calculated	Balances
Portfolio equity	Balances	Calculated	Balances
Foreign direct investment	Balances	Calculated	Balances
Financial derivatives	Balances	Calculated	Balances
Net financial assets	**Calculated**	**Calculated**	**Calculated**
Capital(gross)	**Calculated**	**Calculated**	**Calculated**

Table 5: Balance sheet of a nation based on Baydoun et al. (2015) one-sector model

The balance sheet for each year includes produced assets (the value of which is estimated by accumulating 'investment' expenditure in the national income accounts (NIA) net of acquisitions and disposals; some non-produced, non-financial assets, such as land but not, in general, including other natural resources, such as coal deposits; accounts receivable and payables ('accruals'); currencies in the form of foreign reserves, holdings of gold and SDRs; portfolio debt and other debt investments; portfolio equity; foreign direct investment; financial derivatives; and 'capital' representing accumulated savings and playing the same role as 'equity' in business balance sheets.

Produced assets comprises of investment in fixed assets and inventories. The produce fixed assets are computed by cumulating estimated gross fixed domestic capital expenditure in each year. Such assets are assumed to have a useful life of 25 years to agree to the SNA. Depreciation is calculated on a straight-line basis. In the computation of fixed asset values, 'acquisitions less disposals' and 'revaluation and other changes in the volume' between $t-1$ and t are aggregated to arrive at the actual values at t.

The cost of the balance of inventories at the end of each year is calculated by deducting or adding the change in inventories during the year to or from the opening accumulated inventory balance. The addition to or the subtraction from the accumulated brought forward inventory balance depends on each year's inventory balance as per the various inventory accounts.

'Capital' is gross savings carried forward from the completed production and distribution accounts underlying the model. The term 'equity' instruments in the national balance sheet constructed in the dissertation are reserved for financial instruments such as portfolio equity, and, in principle, the equity component of foreign direct investment and financial derivatives.[1] The debt in the national balance sheet consists of debt instruments and other investment. The figure for 'accruals' are obtained from the re-constructed ledger accounts underlying the measurement system. The ledger tracks the transactions in the completed production and distribution accounts between $t-1$ and t. It also tracks the changes in the financial assets and liabilities resulting from acquisitions and disposals during the period.

Income Statement

Table 6 shows how the income statement of a nation is prepared. The income statement comprises: sales; sales less purchases of products and services, other income (net property income from abroad); consumption expenditure; distributions of income (current transfers); distributions of capital (capital transfers); changes in value of net assets and changes in capital.

[1] It is assumed here that all FDI and derivatives are equity interests.

'Sales less purchase of goods and services' is estimated gross value added, equalling net sales to final demand within the domestic economy. 'Other income' net is net property income and expenses received and paid abroad. 'Consumption' expenditure denotes all consumption expenditure at market prices for households, government and NPISHs per the SNA. Distributions of income' are the SNA's current transfers abroad (net) and 'Distributions of capital' are capital transfers abroad (net). The calculated figure for the increase or decrease in capital in the income statement should reconcile the opening and closing figures showed in the balance sheet.

ITEM	**Corresponding SNA Concept**
Sales	Output
Intermediate purchases	Intermediate consumption
Sales less purchases of goods and services	Gross Value Added (GDP)
Other income (net)	Property income from abroad (net)
Gross Income	**National Income**
Consumption	Consumption expenditure
Depreciation	Capital consumption allowance
Net Income/Loss	**Sum of above items**
Distributions of income	Current transfers abroad
Gross Savings	**Sum of above items**
Distributions of capital	Capital transfers abroad
Net Savings	**Sum of above items**
Changes in value	Revaluations & other adjustment
Increase/Decrease in capital accounts	**Sum of above items**

Table 6: Income statement of a nation based on Baydoun et al. (2015) one-sector model

Funds Flow or Currency Flow Statement

Table 7 shows how the Funds Flow Statement is prepared for a nation. The starting point of the Funds Flow Statement is net income for the year after distributions, which is reconciled to the changes in the currency balances in the way indicated in Table 7. The table summarises the way funds generated by

the economy, i,e. the national income before depreciation of assets and any revaluations, has been utilised or supplemented in the period. If the currency changes are treated as being the result of adding and subtracting the other elements in the statement to 'funds from operating activities', one can think of this statement as a 'Currency Flow' Statement, rather than a 'Funds Flow' Statement.

ITEM
Increase/Decrease in capital accounts
Revaluation & other adjustments
Depreciation
Funds/ Cash flow from operating activities
Increase/Decrease in fixed assets
Increase/Decrease in loans
Acquisition/Disposal of equity instruments
Increase/Decrease in accruals
Increase/Decrease in currency

Table 7: Funds Flow Statement of a nation based on Baydoun et al. (2015) one-sector model

5.3 The DuPont Financial Analysis Model

The DuPont model was developed by F. Donald Brown in the early 1900s as a tool for assessing the sources of firm's profitability (Almazari, 2012; Botika, 2012: Kusi et al., 2015). The model provides an approach that permits a structured ratio analysis of corporate profitability and returns, linking the major returns metric of returns on assets to the other ratios produced from financial statements (Padake & Soni, 2015). It is frequently used for judging the financial performance of an accounting entity (Sheela & Karthikeyan, 2012). The DuPont framework is also used by analysts to determine if a company is subject to solvency and liquidity problems (Bansal, 2015).

The model is based on the analysis of return on equity (ROE) and return on assets (ROA) (Botika, 2012; Liesz, 2002; Sheela & Karthikeyan, 2012). Its decomposes ROE and ROA to help identify the underlying causes of profitability and return over time (Little et al., 2009; Padake & Soni, 2015;

Sheela & Karthikeyan, 2012; Ally, 2013; Chang et al., 2014; Delen et al., 2013; Kijewska, 2016; Raza et al., 2013; Soliman, 2008). Arithmetically, the relationships between the main ratios are defined as follows:

$$r_t = n_t \times a_t \times e_t \qquad (4)$$

Where $r_t = ROE_t$ is net income divided by capital, n_t is the net profit margin, a_t is the asset turnover ratio, and e_t is the equity multiplier. These ratios are in turn defined as: n_t, net income divided by sales; a_t, sales divided by total assets and e_t ,total net assets divided by capital. ROA, the return on assets, r_t' is thus:

$$r_t' = n_t \times a_t \qquad (5)$$

Thus, the relationship between ROA and ROE is

$$r_t = r_t' \times e_t \qquad (6)$$

The net profit margin measures the relationship between net profit and sales (Patel & Mehta, 2012). The net profit margin indicates the impact of market forces on economic performance of entities (Almazari, 2012). Thus, the net profit margin of entities is less subject to managerial control. However, managers could improve upon their entities net profit margin if they adopt cost reduction strategies (Jan, 2016; Kasilingam & Jayabal, 2012). Effective product pricing and product differentiation strategies could also improve a firm's net profit margin and profit margin growth (Zelgalve et al., 2014; Selling & Stickney, 1989). At the macro level, the net profit margin is impacted particularly by the terms of trade based on prices of exports and imports (Borkin, 2006).

The asset turnover ratio shows the productive capabilities of entities (Fairfield & Yohn, 2001). The asset turnover ratio (ATO) also indicates the efficiency with which assets are used in generating sales (Arab et al., 2015; Bansal, 2015; Fairfield & Yohn, 2001; Kasilingam & Jayabal, 2012; Matthew et al.,

2016; Raza et al., 2013; Selling & Stickney, 1989; Soliman, 2008). A high asset turnover ratio represents asset utilisation efficiency. A low ATO ratio denotes asset utilisation inefficiency.

The equity multiplier measures 'gearing' or financial leverage (Bansal, 2015; Kasilingam & Jayabal, 2012). Its shows how much debt an entity uses to finance its activities and is closely related to risk. A high financial leverage of an entity means that such an entity relies considerably on debt in its assets financing (Liesz, 2002). However, if it's low, then its means that the entity depends less on debt in its assets financing (Liesz, 2002).

The ROA measures the ability with which an entity management is able to generate returns for its investors (equity and debt holders). The ROA also shows the overall efficiency with which an entity utilises its asset in profit generation (Jewell & Mankin, 2011; Ongore & Kusa, 2013; Sheela & Karthikeyan, 2012). A positive trend of ROA indicates increasing efficiency in this respect.

The ROE shows the ability of an entity to make returns for equity investors (Kabajeh et al., 2012; Kasilingam & Jayabal, 2012; Lakshan & Wijekoon, 2013). A high ROE for an entity means that such an entity is employing the funds provided by equity holders effectively.

The gearing ratio used later in this dissertation to assess financial risk divides debt by total funds meaning equity plus net financial assets. The gearing ratio in this form has the useful property that it lies between 0 and 1, where the closer a ratio is to 1, the higher its financial risk (Akhtar et al.,2012; Babalola & Abiola, 2013; Deng et al., 2015; Heikal et al., 2014; Jan, 2016; Saxena, 2016; Rehman, 2013; OECD, 1989; Steenkamp, 2010). These ratios, especially when based upon short-term debt can be used to investigate the possibility of insolvency and loan repayment difficulties in periods of economic meltdown (André, 2011; Cecchetti et al., 2011) . However, time and data constraints do not permit the study of these factors in this dissertation.

5.4 Data Sources

The data required to construct the financial statements defined in Tables 5, 6 and 7 are obtained from three main sources. The National Income (NI) data (1970-2011) is sourced from the UN Common Database. This includes GDP, GNI, fixed domestic capital formation, total final consumption and

current and capital transfers. The financial asset and liabilities data is obtained from the "updated and extended version of dataset (1970-2011) constructed by Lane and Milesi-Ferretti (2007)". The "updated and the extended version of Lane and Milesi-Ferretti (2007)" data set is available at Philiplane Organisation website. The updated dataset constructed by Lane and Milesi-Ferretti is derived from various sources that follow the conventions of Balance of Payment and International Investment Position data. Unlike the national accounts data which are base on flows, the Lane and Milesi-Ferretti data is base on stocks with flows calculated as the difference between beginning and end of each period. The Lane and Milesi-Ferretti data is in US dollars with the data converted to NZ dollars using the World bank exchange rate.

5.5 Conclusion

This chapter has explained the methods used to construct New Zealand's financial statements for the period 1970 - 2011. The variables to be included in the financial statements and the ratio analysis have also been explained. Details of the sources of data have also been described and available at http://unstats.un.org/unsd/snaama/ and http://www.philiplane.org/EWN.html.

Chapter 6 Results

6.1 Introduction

This chapter of the thesis presents the estimated financial statements for New Zealand from 1970 to 2011, applying the method explained in the previous chapter. The financial statements are shown in current prices.

6.2 Estimated financial statements for New Zealand

The full details of the New Zealand financial statements are contained in Appendices 1 and 2 of the thesis. Balance sheets, income statements and funds flow statements in current prices covering the last six years of the sample period are shown in Tables 8.

Conceptually, the current cost, or the "historic cost" financial statements allocate the total debt of New Zealand, revalued at current costs, with the rest of the world, created by its transactions from 1970 through to 2011. This debt is accumulated as either produced assets or financial assets and liabilities. In addition, a certain amount of internally generated debt attributable to investment and inventory expenditure is also accumulated in the value of produced assets. Some elements in the current cost financial statements, such as equity instruments are in fact, based upon a mixture of original costs and market values (see chapter 4). No attempt is made to value the natural assets of New Zealand in the balance sheet, however, in Baydoun et al. (2015) paper; natural assets of UAE were valued.

The non-valuation of the natural assets of New Zealand in this dissertation was simply to limit the scope of the study to a manageable level.

Balance sheets

The balance sheets in Table 8 show gross, produced 'real' assets as the accumulated sum of gross domestic fixed capital formation net of acquisitions or disposals, and inventories, in the top two rows

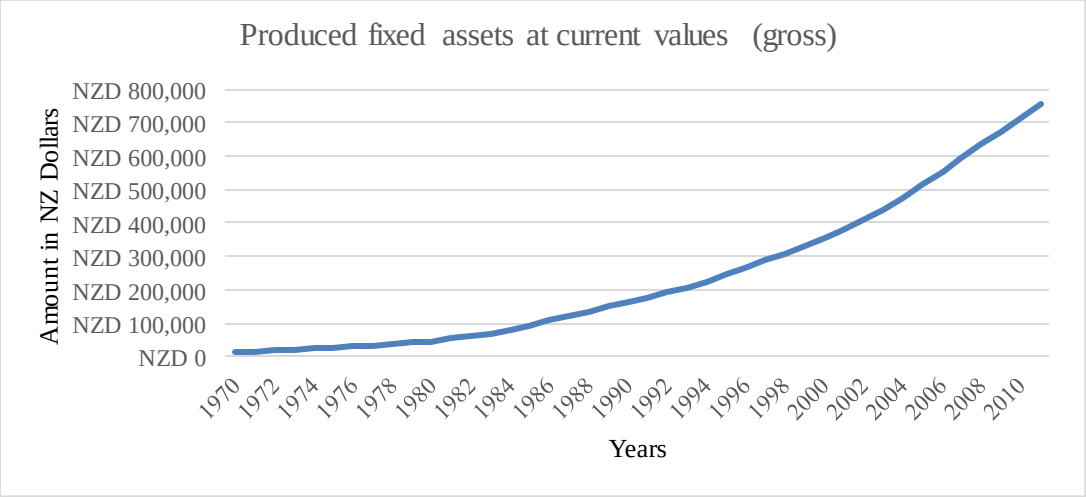
of figures. Financial assets and liabilities, all with respect to foreigners in a one-sector economy, populate the remainder of the balance sheet. The financial assets and liabilities are classified into currency balances (foreign reserves and gold), account receivables and payables, debt, and equity instruments in a form of securities. In business language, capital (gross) is interpreted as New Zealand's 'equity', being the difference between total assets and liabilities.

Year	2006	2007	2008	2009	2010	2011
Balance sheet						
Produced fixed assets at current values (gross)	553092	594992	634185	671022	711032	753190
Inventories	20806	22391	23588	22264	23126	24409
Non-Financial assets	**573898**	**617383**	**657773**	**693286**	**734158**	**777599**
Financial Assets						
Accruals (Accounts receivable)	22490	8525	0	24560	18311	0
Currencies	21694	23468	15724	24964	23209	21534
Debt	30308	34935	28742	43184	44806	49402
Portfolio equity	46911	50458	27817	48047	49279	41869
Foreign direct investment	20364	21591	19847	22191	22978	23852
Financial derivatives	6401	9881	20260	16194	17911	20948
Financial Liabilities						
Accruals (Accounts payable)	0	0	20737	0	0	1198
Debt (Portfolio debt and other investment)	147673	161945	136883	191675	185692	173797
Portfolio equity	18224	17053	8164	14792	12819	11362
Financial derivatives	7996	9677	19073	18687	18437	21355
Foreign direct investment	92270	92980	74067	104814	97125	93214
Net financial asset	-117995	-132797	-146534	-150828	-137579	-143321
Capital (gross)	**455903**	**484586**	**511239**	**542458**	**596579**	**634278**
Notes:						
Accumulated depreciation	240722	259528	279220	299546	320464	342022
Net real assets	333176	357855	378553	393740	413694	435577
Accumulated capital (net)	215181	225058	232019	242912	276115	292256
Income statement						
Sales	355492	387899	395051	389846	414303	433932
Intermediate purchases	186829	205638	209490	202044	212673	223632
Sales less purchases	168663	182261	185561	187802	201630	210300
Other income (net)	-11616	-13544	-13176	-7773	-10115	-9666
Gross income	**157047**	**168717**	**172385**	**180029**	**191515**	**200634**
Consumption expenditure	131995	139972	145868	149046	156012	163503
Depreciation	17777	18806	19692	20326	20918	21558
Net income	**7275**	**9939**	**6825**	**10657**	**14585**	**15573**
Current transfers abroad	644	698	854	581	-176	-304
Capital transfers abroad	-457	-760	-718	-345	18794	872
Net savings	**7462**	**9877**	**6961**	**10893**	**33203**	**16141**
Funds flow statement						
Net savings	**7462**	**9877**	**6961**	**10893**	**33203**	**16141**
Revaluations and other adjustments	0	0	0	0	0	0
Depreciation	17777	18806	19692	20326	20918	21558
Operating fund flow	**25239**	**28683**	**26653**	**31219**	**54121**	**37699**
Expenditure on fixed assets	-39046	-43485	-40390	-35513	-40872	-43441
Increase/ Decrease in loans/debt	26074	9645	-18869	40350	-7605	-16491
Increase/decrease in accruals	-10525	13965	17579	-33614	6249	19509
Increase/decrease in equities	7322	-7034	7283	6798	-13648	1049
Increase/ decrease in currencies	**9064**	**1774**	**-7744**	**9240**	**-1755**	**-1675**

Table 8: Financial statements (current cost) New Zealand dollars, Fiscal year ending 31st March.

Produced assets follow an exponential, smooth, growth path, with a close to log-linear trend (see Figure 1). This is the expected time-pattern of value for accrued costs of the type used to value assets in this way and differs markedly from the time sequences of individual financial asset and liability accounts shown in the lower part of the balance sheets. The growth rate of produced fixed assets between 2006 and 2011 was about 7%.[2] A more detailed classification of the types of produced fixed assets that make up the aggregate figure shown in Table 8 is discussed later in Table 9.

Panel A



Panel B

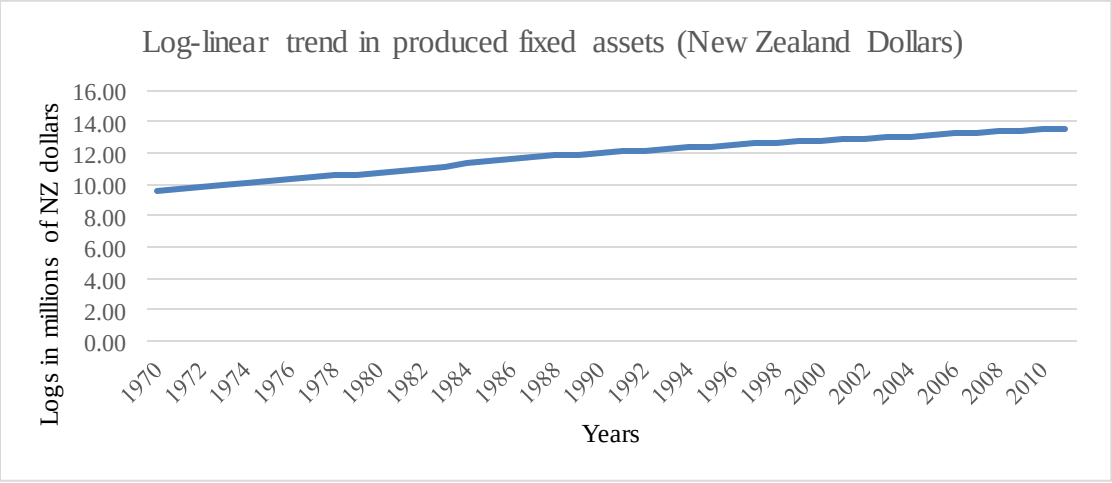


Figure 1: The time pattern of the value of produced fixed assets

[2] The values of fixed produced assets are similar to those estimated for the same period, by different methods, by the New Zealand Statistical Office (see 'Annual balance sheets: at 31 March 2007–15 (provisional) – Table 3', Statistics New Zealand, http://www.stats.govt.nz/)

Produced fixed assets constituted approximately 97% of the total produced assets of New Zealand economy as at the end of 2011. The 97% of produced assets was calculated based on Table 8. The remaining 3% consisted of inventory values in the balance sheet. These depict the yearly-accumulated balance on inventory accounts calculated from yearly changes in inventory shown in the NIA. New Zealand's inventory account comprises raw materials, work-in-progress and finished goods. Between 2006 and 2011, the balance on New Zealand accumulated inventory account grew on average at about 3% with a sharp fall occurring between 2008 and 2009. That decrease reflected the impact of the drought that affected the dairy farming region in 2008 and 2009 (Lattimore & Eaqub, 2013).

The outstanding accrual values, receivables and payables, shown respectively in the financial assets and liabilities sections in the balance sheet in Table 8 reflect the intermediate stage in the settlement cycle between New Zealand and other countries (i.e., rest of the world). This shows the extent of the value of the exchange of physical resources in the form of exports and import of goods and services not yet reflected in the value of debt and equity instruments and foreign currency reserves and gold. Generally, one would expect the net effect of receivables and payables to oscillate around a zero value over time as their value is transferred to the various types of financial instrument. This pattern occurs but over relatively long intervals (see Figure 2)

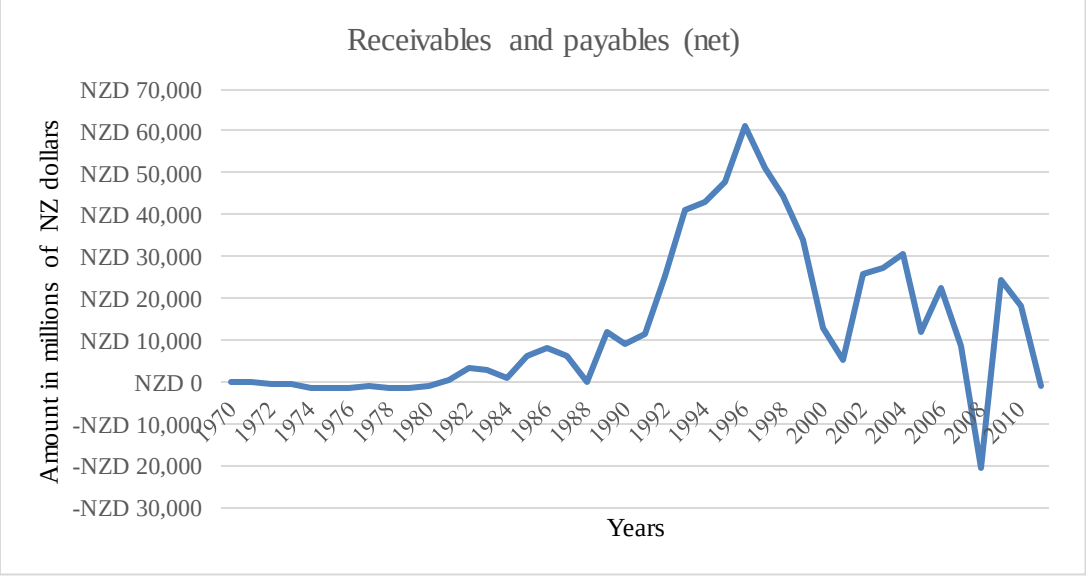
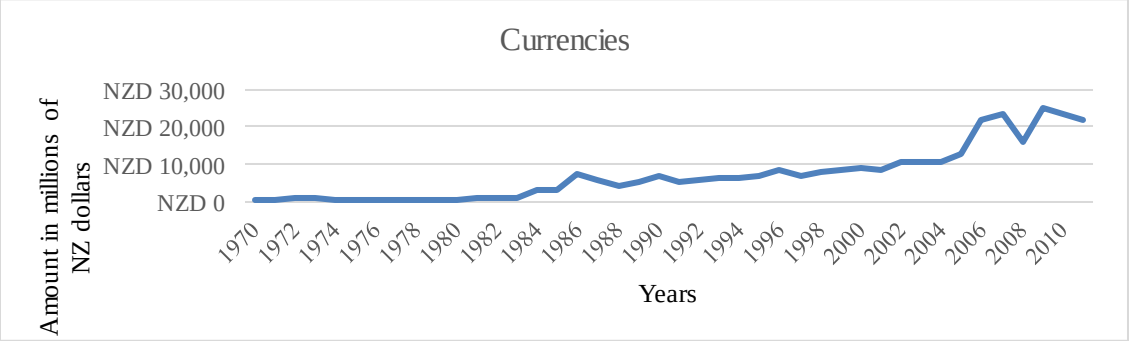


Figure 2: Time pattern of net receivables and payables 1970 - 2011

For instance during the late 1980s through to the global financial crisis, receivables were positive and highly so in the mid-1990s. Between 1992 and 1996 the amounts exceed 40% of the net capital of New Zealand. If this pattern of net receivables was exhibited by a business enterprise, where receivables do not usually earn interest, its financial management would be questioned.

The item in the balance sheet labelled 'Currencies', including holdings of gold are like their business counterpart, Cash, an acid test of an economy's liquidity. Figure 3, Panel A exhibits the time sequence of the value of this account between 1970 – 2011, showing how it has increase in value over time. The proportion of the value of net capital of New Zealand held in currency balances and gold has been running at close to 8% in recent years, with a spike in the mid-1980s of over 10%, suggesting a cautious monetary policy (Figure 3, Panel B, Table 8). The decrease in the levels of the New Zealand reserves between 2006 and 2008 and 2011 correspond to the impacts of the GFC and the Canterbury earthquakes.

Panel A



Panel B

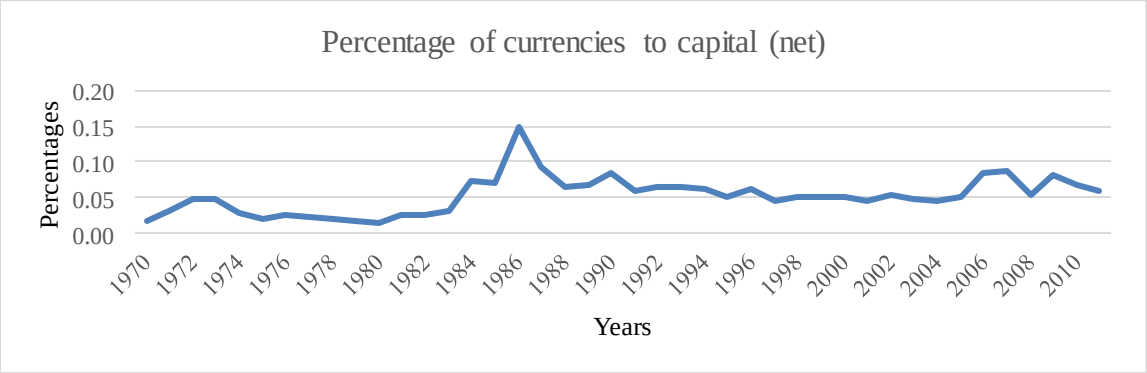


Figure 3: Behaviour of New Zealand's currencies account 1970 – 2011

The debt (assets and liabilities) in the balance sheet constitutes the value outstanding portfolio and other debt instruments, and so combines short-term and long-term debt. It constitutes probably the largest financial risk metric for the New Zealand economy. The net positions of New Zealand with the other three elements of its financial assets and liabilities reflect other aspects of its financial position, less closely connected with risk. Figure 4 summarises the time sequences of net debt and the net amounts of these three accounts. Foreign Direct Investment represent 10% controlling interest in real assets represents by value equity and debt in corporations. These interests are long-term and less volatile in their impact the investee country's financial position than are the other accounts shown in Figure 5. New Zealand's portfolio equity is positive and from the national viewpoint represents a buffer against the effect of its negative debt position. Derivative holdings represent hedging and speculative activities influencing the overall risk position of New Zealand but they are negligible compared to the other accounts[3].

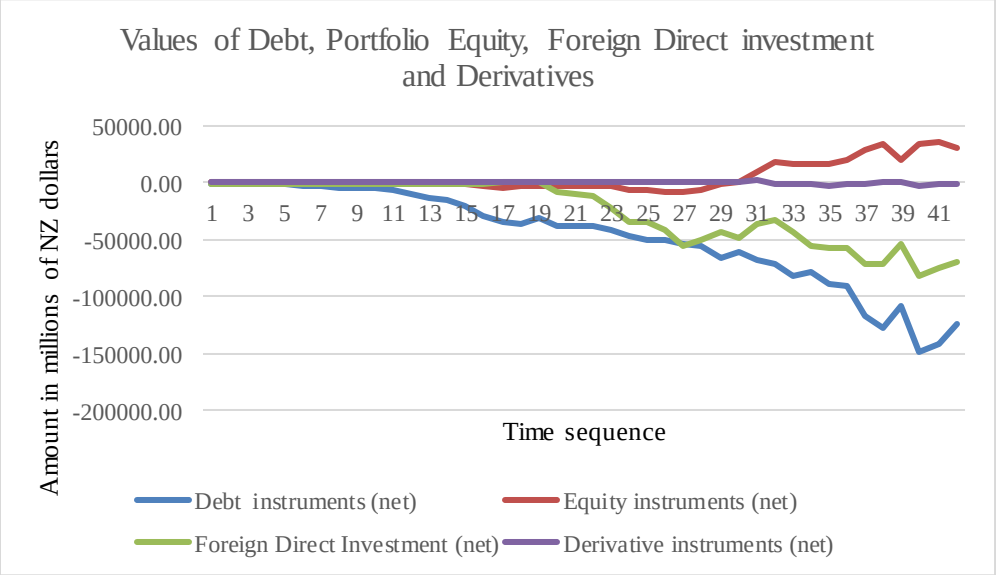


Figure 4: Time patterns of holdings of debt, equity, foreign direct investment and derivatives 1970 -2011

[3] The financial risk contained in New Zealand's derivative position, like that of a corporation holding derivatives, is uncertain since market fluctuations can quickly and significantly affect its value.

The level of financial risk in the New Zealand economy over time absent of consideration of its net portfolio equity position, FDI and derivatives can be seen by observing New Zealand's percentage of its debt compared to its capital account (net). This form of New Zealand's gearing ratio is shown in Figure 5.

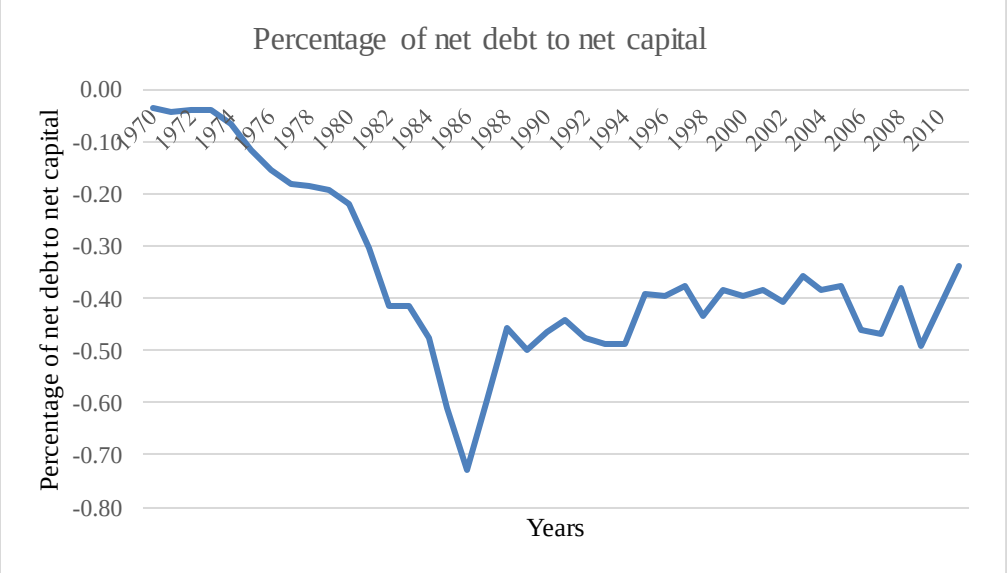


Figure 5: Percentage of net debt to net capital of the New Zealand economy from 1970 to 2011.

From Figure 5, it can be observed that borrowing from abroad reached 70% of New Zealand's net worth in the early 1980s when the economy was undergoing structural reforms. From the mid-1990s through to 2011 the percentages held fairly steady at about 40% with what appear to be temporary increases in debt levels at the time of the GFC. This level pattern over almost two decades suggests fairly good control of foreign indebtedness in recent years. Furthermore, this version of the gearing ratio is based on a national wealth metric (i.e. net capital employed) that excludes the valuation of natural resources. Recent studies by the New Zealand Statistical Office estimates these values to be about the same as the produced assets. Consequently, the New Zealand gearing ratio based on upon assets including the estimated value of natural resources would currently be about 20% on that basis

(see Footnote 1 for the source of this data). The evolution of the gearing ratio is further examined later in the context of a Du Pont analysis of the financial statements of New Zealand.

The value of the capital account (net) in the balance sheet represents the net worth or accumulated savings after depreciation of produced assets of New Zealand residents. To the extent that it can be compared with estimates of capital consumption reported by Statistics New Zealand, the depreciation allowances shown in Table 8, calculated in the manner explained in Chapter 5, are similar in order of magnitude and, in fact, quite close. For instance the depreciation allowance shown in Table 8 in 2011 is NZ$25918 compared to the capital consumption allowance for 2011 estimated by Statistics New Zealand of NZ$29,873 (Statistics New Zealand, 2014). The evolution of the capital account net over the period 1970 - 2011 is very similar to the timeline exhibited by produced fixed assets (Figure 1). Its graph is shifted downwards to the time axis due to the existence of the liabilities discussed above but it has the same exponential appearance over time and is close to being log-linear.

The relative smoothness of the produced assets graph is to an extent related to the method of calculation used to produce the accounts values. Nevertheless, the outcome it gives is consistent with the basic nature of accounting for real economic activities on an accrual basis, since the increment of the value of produced assets with time is, under this method of accounting, related to the accumulation of wealth by human effort that is not all consumed as it is earned. The smoothness of the timeline for produced assets and over wealth in the capital account is contrasted to the timelines of the financial assets and liabilities, as displayed in Figures 3 and 4 above. Accrued receivables and payables are the most obvious example, but the other time series also display greater volatility and a less pronounced smooth growth path than that of produced assets and capital. Again, this is a feature of a form of accounting in which smoothing has a lesser effect on financial flows that it does on ‘real activity’ flows.

The income and funds statements analyse changes in the real activity flows and financial activity flows respectively. Changes in the level of the net worth of the New Zealand economy are analysed in the income statement assuming adherence to the ‘clean surplus’ principle of earnings (Brief, 2013).

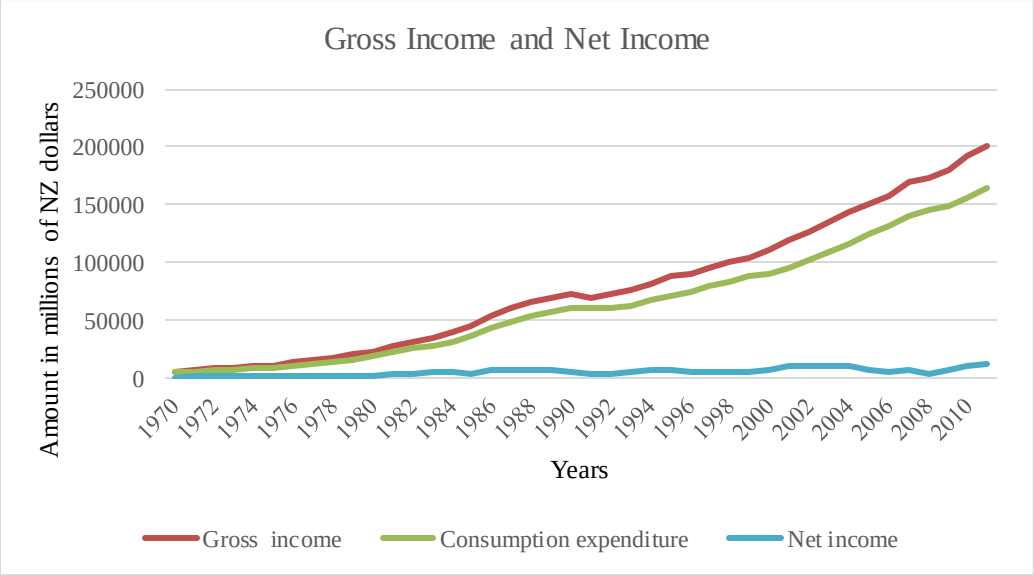
The funds flow statement extracts the effect of accrual accounting to give the simple changes in balances on the various financial accounts. It reconciles the change in net wealth, or income, through 'operating funds flows' which eliminates the effect of accounting adjustments such as depreciation and through changes in borrowing and investment to the flow of currencies and gold. Consequently, the final row in Table 8 shows how the changes in the latter accounts in the balance sheet are 'caused' by economic activities (the operating funds flow) and changes in the other fund accounts (i.e. debt and equity instruments of various types.

The income statement in Table 8 shows the results of physical activities undertaken over the final six years of the sample period. The income statement begins with sales, followed by sales less purchases, characterised here as 'gross income', and ends with net savings adjusted for revaluations. Gross income corresponds to GDP in a macroeconomic context. Ideally, gross income should be grossed up by 'intermediate purchases' for purchases internally consumed to produce 'sales'. Data for intermediate consumption was available and was therefore gross up with GDP to produce the sales values.

As with other accounting measures of economic activity, gross income displays a smooth geometric growth path. The major part of the difference between gross income and what is referred to here as net income is consumption expenditure, which also shows a similar geometric growth path over time (Figure 6, Panel A). Net Income is less smooth than gross income as additional activities, such as income paid abroad, are more intermittent in nature (Figure 6, Panel B).

Other income in the income statement results from netting off property income (interest, dividends, rent) and employment compensation received and paid between New Zealand and the Rest of the World. New Zealand 'other income' has nearly always been negative in recent years. In part, this reflects the extent to which the New Zealand economy relies on foreign investment.

Panel A



Panel B

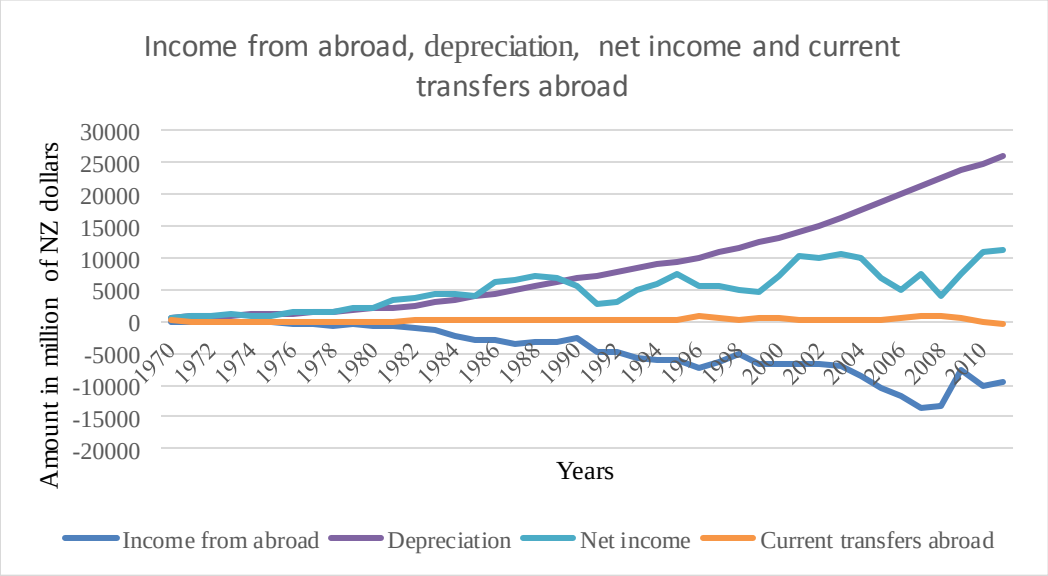


Figure 6: The time pattern with income statement variables

The current transfers abroad are treated in this thesis as being akin to deductions relating to taxes and dividends in business accounting, i.e. transfers of value consistent with the way they are treated by the

SNA. The net current transfers for New Zealand are usually positive which means that, to the extent that the transfers received by New Zealand from the rest of the world are more like distributions, in business accounting they would be included as 'other income' in arriving at net income. However, the treatment of such current transfers adopted here is symmetric, the same as in NIA. Capital Transfers are interpreted as distributions of wealth, rather than a charge to income. Like current transfers, the value of capital transfers is small relative to the other elements in the income statement (see Figure 6, Panel B).

Net savings shown at the foot of the income statement in Table 8 is the difference between the capital account, or net wealth, of New Zealand at the beginning and end of the financial year, i.e. the net income after distributions. The income statement provides an analysis of how the net savings, the increase in the accrual measurement of net wealth, is related to gross income. This figure appears at the beginning of the funds flow statements in Table 8 and is reconciled to the change in currency holdings at the foot of the funds flow statement. The elements of the statement are changes in receivables and payables and in the different types of financial instrument used to fund economic activity.

The nature of the reconciling elements in the funds flow statement is that they have erratic time series behaviour. Choice of the methods for funding economic activity depends on complex factors including interest rates and other attributes of financial markets as well as those affecting the real economy. Figure 7 illustrates the volatility in the behaviour of the fund accounts over the period from 1970 to 2011.

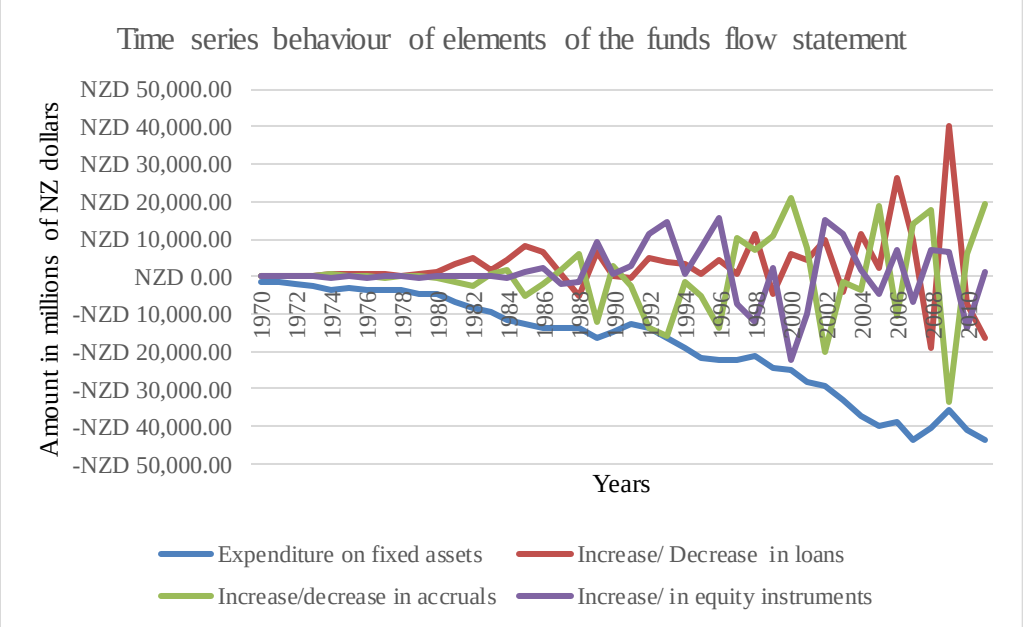


Figure 7: Time series behaviour of elements of the funds flow statement of the New Zealand economy from 1970 to 2011.

The figure displays the elements that explain the disposition of the funds acquired through the various funding sources by way of expenditure on fixed assets. The 'operating profit' is the same as the increase in the capital account after adding back depreciation, representing the total funds available for economic activity, after consumption, prior to seeking funding by way of credit of some sort.

The accounts in the financial statements are aggregates of many more specific accounts detailed by Statistics New Zealand. Produced fixed assets in particular show total values of the most important physical and other resources used to produce New Zealand's wealth. Table 9 shows details of the main components of produced assets. These are classified into residential buildings, non-residential buildings, other construction, land improvements, transport equipment, plant machinery and equipment, computer software and mineral and other exploration categories.

Residential buildings comprise of all buildings built for accommodation purposes. They include example such as houses, flats and multi-units, garages and carports, hostels and boarding houses as well as military structures acquired for the purposes of accommodations. Non- residential buildings refer to buildings constructed mainly for commercial purposes and consist of examples such as hotels

and motels, hospitals and nursing homes, recreational buildings, shops and restaurants, offices and administrative buildings, factories, power houses and farm buildings as well as expenditure incurred for site clearance. Other constructions encompass structures other than buildings and, it includes infrastructure assets such as roads, bridges, tunnels, subways, railways, airports runways, waterways, harbours, dams, pipelines, communication cables, and power lines. Land improvement consists of the expenditure incurred on the initial development and redevelopment of lands. They include examples such as land clearings, land drainage, land contouring, irrigation works, erosion and flood control developments such as constructing banks and tree planting. Transport equipment consists of equipment for moving people and goods and includes motor vehicles, ships, aircraft, rail locomotives, rolling stock and fishing vessels. Plant, machinery and equipment comprises heavy machinery (e.g., bulldozers, diggers, excavators, graders and steam generators), general purpose machinery (e.g., pumps, compressors, trucks, forklift), electronic machinery (e.g., medical and surgical equipment, transmitters, photocopies, broadcasters, optical and photographic equipment), electrical equipment (e.g., turbines, electric motors, power control systems) and furniture and fittings (e.g., hotel beddings and dinning).

	2006	Composition (%)	2007	Composition (%)	2008	Composition (%)	2009	Composition (%)	2010	Composition (%)	2011	Composition (%)
Residential buildings (Gross)	**134777**	**24.37**	146643	**24.65**	155725	**24.55**	163931	**24.43**	172732	**24.29**	182005	**24.16**
Residential buildings (net)	89338	**25.34**	97120	**25.48**	102015	**25.07**	106032	**24.63**	110657	**24.14**	115844	**23.76**
Non-residential buildings (Gross)	**80049**	**14.47**	85401	**14.35**	90848	**14.33**	95857	**14.29**	101296	**14.25**	107028	**14.21**
Non-residential buildings (net)	49953	**14.17**	53468	**14.03**	56992	**14.01**	60157	**13.98**	64142	**14.00**	68704	**14.09**
Other construction (Gross)	60518	**10.94**	66305	**11.14**	72807	**11.48**	80055	**11.93**	87932	**12.36**	96231	**12.77**
Other construction (net)	39558	**11.22**	44111	**12.74**	49230	**11.57**	54868	**13.31**	61086	**12.10**	67591	**13.84**
Land improvement (Gross)	9149	**1.65**	9853	**1.66**	10899	**1.72**	11928	**1.78**	13047	**1.83**	13047	**1.89**
Land improvement (net)	6143	**1.74**	6791	**1.78**	7736	**1.90**	8634	**2.00**	9528	**2.08**	10384	**2.13**
Transport (Gross)	69927	**12.64**	74192	**12.47**	76805	**12.11**	79080	**11.79**	81546	**11.47**	84145	**11.18**
Transport (net)	45033	**12.78**	48038	**12.61**	49222	**12.11**	50434	**11.72**	52127	**11.38**	53603	**11.00**
Plant and machinery (Gross)	163934	**29.64**	174750	**29.37**	186123	**29.35**	195849	**29.19**	206410	**29.03**	217538	**28.89**
Plant and machinery (net)	100214	**28.44**	107452	**28.20**	115446	**28.39**	122033	**28.36**	129955	**28.35**	137966	**28.30**
Computer (Gross)	30739	**5.56**	33586	**5.64**	36523	**5.76**	39662	**5.91**	43035	**6.05**	46588	**6.18**
Computer (net)	19876	**5.64**	21628	**5.67**	23468	**5.77**	25476	**5.92**	27658	**6.03**	30031	**6.15**
Minerals and other explorations (Gross)	3999	**0.72**	4262	**0.72**	4455	**0.70**	4661	**0.69**	5034	**0.71**	5430	**0.72**
Minerals and other explorations (net)	2331	**0.66**	2478	**0.65**	2648	**0.65**	2808	**0.65**	3182	**0.69**	3574	**0.73**
Grand total-gross assets	**553092**	**100**	**594992**	**100**	**634185**	**100**	**671022**	**100**	**711032**	**100**	**753190**	**100**
Grand total-net assets	**352446**	**100**	**381086**	**100**	**406758**	**100**	**430442**	**100**	**458335**	**100**	**487696**	**100**
Notes	The table presents the accumulated produced assets (gross and net) adjusted for non-produced non-financial assets (NPNFA) per each individual asset class and their compositions over the 2006 to 2011. The assets have been categorised into residential buildings, non-residential buildings, other construction, land improvement, transport, plant machinery and equipment, computer and minerals and other exploration. The classifications of the produced assets are from http:// http://www.stats.govt.nz/. The values of the assets are in millions of New Zealand dollars. The NPNFA was NZ-$2471 over the period and was shared among the assets classes using the weight of each assets as at 2006 .The composition refers to the weight of the assets, computed by expressing the values of each asset on the grand total for the respective years.											

Table 9: Accumulated and composition of produced assets classes (gross and net)

Minerals and other explorations comprise expenses incurred in the initial exploration of oil and gas and minerals. This includes licencing and acquisition costs, cost of actual drilling and boring, transportation cost incurred in the exploration works, and the cost of aerial and other surveys.

The largest categories of investment in produced assets in the New Zealand economy are residential and non-residential buildings and other construction. In aggregate, these categories make up about one-half of the total asset wealth of New Zealand, excluding the value of natural resources. Plant, machinery and equipment are the other main category in terms of asset value being about 30% of total asset value. Of the remainder, only transport exceeded 10% of the total asset value, with computers being about 6%. Mineral exploration costs made up less than 1% of the produced assets. These relative percentages remained reasonably constant over the six years from 2006 to 2011. Depreciation did not significantly affect the relationships. Without valuing New Zealand's considerable natural resources, produced assets accounted for about 94% of the total assets value of its economy in 2011.

Log rate of growth in assets (gross)	**2006 %**	**2007 %**	**2008 %**	**2009 %**	**2010 %**	**2011 %**
Residential buildings	6.60	8.79	6.37	5.25	5.36	5.36
Non-residential buildings	7.17	6.67	6.56	5.49	5.67	5.65
Other construction	8.88	9.54	9.97	9.92	9.82	9.42
Land improvement	10.93	10.52	14.15	11.55	10.32	8.96
Transport	6.08	6.09	3.71	2.95	3.12	3.18
Plant and machinery	6.70	6.58	6.69	5.21	5.38	5.38
Computer	9.00	9.24	8.91	8.57	8.49	8.24
Minerals and other explorations	5.12	6.57	4.71	4.61	8.01	7.85
Rate of growth in assets (net)						
Residential buildings	8.69	8.68	5.30	3.92	4.36	4.68
Non-residential buildings	7.71	7.01	6.87	5.52	6.61	7.09
Other construction	10.17	11.47	11.84	11.40	11.29	10.61
Land improvement	10.93	10.52	14.15	11.55	10.32	8.96
Transport	6.84	6.65	2.76	2.45	3.36	2.83
Plant and machinery	6.74	7.20	7.72	5.67	6.47	6.14
Computer	7.89	8.79	8.77	8.51	8.54	8.55
Minerals and other explorations	5.00	6.29	7.23	5.99	13.31	12.40

Table 10: Growth in produced assets classes (gross and net)

Table 10 shows the growth rates in the different asset categories over the same years as in Tables 8 and 9. Noticeably less growth is shown in expenditure on transport in the last three years than in the first three.

Minerals and other exploration assets experienced the highest expenditure growth over the last three years of the period but these were small in magnitude compared to other categories of expenditure. The growth rates in the other categories were fairly stable.

Table 11 decomposes produced assets into industries. The industries are classified into primary industry (agriculture, forestry and logging, fishing and mining), secondary industry (manufacturing) and tertiary industry (construction, wholesale trade, retail trade, accommodation, restaurant and bars, transport, storage and communication, finance and insurance, ownership of owner occupied dwellings and business services, government, education, health, cultural and recreation and community).

Most of the value of produced assets in the New Zealand economy, measured in the way adopted here, is concentrated in the tertiary industries, followed by the manufacturing industry and then the primary industries. As with most 'advanced' economies, this ordering is becoming more marked with time, although the trend is only just noticeable over the six year period between 2006 and 2011, with a shift of value to the tertiary from the other sectors of about 1%. Much of the tertiary growth was in the Education, Health and Community services industries.

Industry classification	2006	Composition (%)	2007	Composition (%)	2008	Composition (%)	2009	Composition (%)	2010	Composition (%)	2011	Composition(%)
Agriculture, Forestry, logging and fishing	34634	6.26	37567	6.31	40318	6.36	42896	6.39	45373	6.38	47846	6.35
Mining	12484	2.26	13741	2.31	14925	2.35	16030	2.39	17090	2.40	18954	2.52
Total (Primary Industry)	47118	8.52	51307	8.62	55243	8.71	58927	8.78	62463	8.78	66800	8.87
Manufacturing	70284	12.71	73635	12.38	76714	12.10	79661	11.87	82977	11.67	86673	11.51
Total (Secondary industry)	70284	12.71	73635	12.38	76714	12.10	79661	11.87	82977	11.67	86673	11.51
Electricity, gas and water supply	26299	4.75	27975	4.70	29535	4.66	31008	4.62	34302	4.82	38003	5.05
Construction	14170	2.56	15427	2.59	16608	2.62	17713	2.64	18410	2.59	19555	2.60
Wholesale trade, Retail trade, Accommodation, restaurant and bars	42846	7.75	45778	7.69	48513	7.65	51091	7.61	53095	7.47	56246	7.47
Transport , storage and Communication	53941	9.75	56873	9.56	59583	9.40	62162	9.26	68695	9.66	74917	9.95
Finance and insurance, Property services, Ownership of owner-occupied dwellings and Business services	211273	38.20	229290	38.54	246201	38.82	262041	39.05	274451	38.60	286554	38.05
Government administration and defence	40502	7.32	44692	7.51	48646	7.67	52330	7.80	53648	7.55	54937	7.29
Education, Health , community services, Cultural and recreational services, Personal and other community services	46659	8.44	50012	8.41	53143	8.38	56090	8.36	62992	8.86	69505	9.23
Total(Tertiary industry)	435691	78.77	470049	79.00	502228	79.19	532434	79.35	565592	79.55	599717	79.62
Grand Total	553092	100.00	594992	100.00	634185	100.00	671022	100.00	711032	100.00	753190	100.00
Notes	1. The table presents the breakdown of accumulated assets (gross) adjusted for NPNFA per each industry and their compositions over the final six years of the sample period.											
	2. The classification of industries are based on the SNA 2008 industry classification and the classification of New Zealand industries by (Lattimore & Eaqub, 2013).											
	3. The values of produced assets for the industries are in millions of New Zealand dollars. The composition refers to the weight of assets held by each industry, computed by expressing the values of each industry asset relative to the grand total of the asset values.											
	4. The NPNFA was NZ-$2471 over the period and was shared among the industries using the weight of each industries share of produced assets as at 2006.											

Table 11: Breakdown and composition of accumulated produced assets per industry

Table 12 shows the growth rates of the key variables of inventories, capital (gross and net), sales less purchases and consumption expenditure. Overall, the New Zealand economy was growing at a rate of about 6% per annum over the six years to 2011 in nominal terms.

Variables	**2006 %**	**2007 %**	**2008 %**	**2009 %**	**2010 %**	**2011 %**
Inventories	0.33	7.62	5.35	-5.61	3.87	5.55
Capital(gross)	5.86	6.29	5.50	6.11	9.98	6.32
Capital (net)	4.97	6.04	4.85	6.37	13.91	7.24
Sales less purchases	5.04	8.06	1.81	1.21	7.36	4.30
Consumption expenditure	6.04	6.04	4.21	2.18	4.67	4.80
Notes	The table depicts the log growth of inventories, capital (gross and net), sales less purchases and consumption expenditure from 2006 to 2011.					

Table 12: Growth of inventories, capital (gross and net), sales less purchases and consumption expenditure

Table 13 gives details of property income and compensation and current and capital transfers received and paid by New Zealand between 2006 and 2011. Net property income paid to foreigners is sizable, comparable in magnitude to net income as seen from Figure 6, Panel B. With the net amount disaggregated into receipts and payments, the relevant amounts are large. The spikes in 2010 and 2011 are due to insurance claim (s) from the earthquakes. Capital transfers also show a spike in value in those years for the same reason.

Variables	2006 NZ$	2007 NZ$	2008 NZ$	2009 NZ$	2010 NZ$	2011 NZ$
Compensation of employees and Property Income from the rest of the world	6140	6929	5539	4848	90522	91799
Compensation of employees and Property Income to the rest of the world	17756	20473	18715	12621	100637	101465
Current transfer from the rest of the world	1957	2094	2337	2003	1172	1264
Current transfer to the rest of the world	1313	1396	1483	1422	1348	1568
Capital transfer from the rest of the world	957	912	88	1038	31024	5786
Capital transfer to the rest of the world	1414	1672	1606	1383	12230	4914
Note	Values are in millions of New Zealand dollars.					

Table 13: Levels of property income and compensation, current and capital transfer

6.3 Conclusion

This chapter of the thesis has presented the results of applying the methods described in chapter 5 to New Zealand's NIA and IIP data to reconstruct its national, financial statements for the period from 1970 to 2011. The financial statements provide an internally consistent, structured account of the main accounts used in economic analysis, supplemented by estimates of produced assets. In particular, they can support a financial statement analysis of the type used in the analysis of businesses in micro-economics. Such a financial statement analysis is undertaken in the next chapter. To achieve this the analysis uses a Du Pont ratio framework, as explained in chapter 5.

The financial statements have been presented in current prices rather than constant prices. For a more extensive investigation, comparisons of results using constant price financial statements would be examined. Moreover, the use of ratios in the next chapter obviates much of the need to use constant prices. Consequently, constant price financial statements are not reported in this thesis.

In chapter 7, the current understanding of the structure and evolution of the New Zealand economy as is evident from the economics literature is compared to the picture presented by the DuPont analysis just referred to. The potential for applying the theories of corporate finance to financial policy at the national level is discussed in this context.

Chapter 7 Analysis

7.1 Introduction

This chapter analyses patterns in the development of the New Zealand economy from 1970 to 2011 using the financial statements presented in the previous chapter. First, the understanding of the economists of the New Zealand economic performance is reviewed. Second, the picture provided by a financial statement analysis of the New Zealand economy is compared to the standard economic interpretation. This shows the incremental information context of the financial statement approach. Third, the analysis is related to the theory of corporate finance.

7.2 Economist understanding of New Zealand's economic performance

Economic growth is an increase in the capacity of an economy to produce goods and services. The most important metric used in the economics literature to assess economic performance is GDP. GDP is the monetary value of the total amount of goods and services produced in a country in an interval of time (Bos, 2006; Bulin & Baltatescu, 2015; Cha, 2013; Syrquin, 2011; UNEP, 2012; van den Bergh, 2009; Wesselink et al., 2007). In the New Zealand context, according to Group (2011), New Zealand economic growth performance over the past decades has been slow and is at the bottom of the OECD rankings. This view of New Zealand's performance is also expressed by Hunt & Conway (1998), IMF (2000), McDonalds (2000) and Schule (2010).

A number of not necessarily competing explanations for the relatively slow growth rate of New Zealand's GDP have been proposed. The two main explanations are low productivity and adverse terms of trade. In addition, government policies are often argued as being ineffective in addressing the underlying causes of poor growth, and natural events also may play their part. Finally, as well as return, there is the all-important other dimension of economic performance, risk, in the form of the level of debt of the New Zealand economy. The behaviour of GDP, productivity, the terms of trade, the current account balance and the debt ratio throughout the period from 1970 to 2011 and their

impact on perceptions of the economic health of New Zealand were noted in chapter 3. These explanations for the relative economic performance of New Zealand are outlined next.

Productivity

Group (2011) argue that the relatively poor New Zealand growth performance in recent decades is due to poor productivity performance. Conway & Meehan (2013) investigate New Zealand productivity performance between 1979 and 2012. The study finds a weak productivity performance for the New Zealand economy between 1985 and 1990 and from 2008 and 2012 and concludes that relatively poor economic growth in New Zealand results from weak productivity growth.

Cheung (2013) examined the policies required to improve New Zealand's economic performance, arguing that long run improvement in New Zealand economic growth depends on New Zealand improving its productivity. Conway & Meehan (2013) also conclude that lifting New Zealand's total factor productivity (TFP) metric is necessary to improve its economic growth. Kehoe & Ruhl (2003) analysed growth in New Zealand and Switzerland between 1973 and 2000 based upon the standard neoclassical growth model. They also find that the poor growth performance in New Zealand and Switzerland is largely due to low TFP. Smith & Grimes (1990) similarly find that New Zealand's relatively poor output and economic growth performance particularly during the post-war period is primarily the result of weak growth in TFP.

Diewert & Lawrence (1999) estimate TFP for the New Zealand economy between 1972 and 1999. Their results suggest that the weak TFP for New Zealand is due to low capital productivity. IMF (2000) also concludes that the slow growth in TFP for the New Zealand economy is mainly due to low capital productivity. Conway & Orr (2000), Brash (2001) and McDonalds (2000) explained that the poor growth in the capital productivity for the New Zealand economy particularly during the 1970s and 1980s is due to investment in assets with low rate of returns. Easton (1997), the IMF (2000), Scott (1996) also express the same opinion. Scott (1996) and IMF (2000) cited, for instance, the 'think big energy projects' initiated by the Muldoon government in the early 1980s as one of the examples of the bad investment choices. Easton (1997) and Grant (1998) although acknowledging

that bad investment choices affected New Zealand performance in the early 80s, argue that investment quality for the New Zealand economy has improved since the period of the reform.

Market factors and the terms of trade

Skilling (2001) while accepting the slow economic performance of the New Zealand economy is partly due to low productivity, suggests that distance and location remain the main factor responsible for the slow GDP growth of the New Zealand economy. Treasury (2004), Bayliss (1994), Gould (1982) and Boulhol & De Serres (2008) also find that the geographical location of New Zealand impacts on its economic performance.

Another market factor affecting New Zealand's economic performance is the impact of economic shocks (Lattimore & Eaqub, 2013). The loss of the New Zealand access to the British market in the early 1970s that affected New Zealand economy during the 1970s is an example of such a shock. This view is supported by the IMF (2000), Borkin (2006) ,OECD (1985), Conway & Orr (2000), Mawson, (2002) and Scott (1996). As Borkin (2006) and Scott (1996) explain, the UK market was the largest destination for New Zealand exports and accounted for more than half of its export earnings. However, Skilling (2001) and Carroll (2012) disagree. They find that the Britain's entry into the European Economic Community (EEC) in the 1970s was not a shock to New Zealand exporters, as most New Zealand exporters had diversified into other markets well before the entry of Britain into the EEC and thus the event did not affect New Zealand economic growth in the 1970s.

Michael & Sleeman (2008) examines the impacts of economic shocks on the New Zealand economic growth performance. They also conclude that economic shocks have had negative impacts on the growth of the New Zealand economy. However, they argue that an important channel through which a shock is transmitted to New Zealand's economic performance is the terms of trade. Their study cited, for example, the 1970s oil price increases, the 1987 share market crash, the Asian Financial Crisis in the late 1990s and the GFC in 2007 through to 2009, as some of the economic shocks that affected the economic growth of New Zealand. They argued that the 1970s oil shocks affected New Zealand economy through terms of trade shocks. Easton (1997), Carroll (2012) and Philpott (1991) also find

that terms of trade shocks in the 1970s caused by the oil price hike affected the economic performance of New Zealand in the 1970s. Lattimore & Eaqub (2013) explain that the oil price hike in the early 1970s (1973 - 1974) and later in 1979 - 1980 was caused by oil export restrictions imposed by the Organisation for Petroleum-Exporting Countries (OPEC). They indicated that the restriction of export of oil by OPEC was as a result of the Arab-Israeli war and the Iraq-Iraq war. Although Lattimore & Eaqub (2013) agree that the decline in the terms of trade in the early 1970s was caused by oil price hike, they stress that the collapse of the world market price in the early 1970s also affected New Zealand's terms of trade. Their views are also supported by OECD (1975), Skilling (2001) and Treasury (2004).

Galt (2000) found that the effects of shocks in New Zealand's terms of trade have stabilised since 1988, after which terms of trade have had less of an impact on New Zealand's economic growth. However, in a recent study of the impact of terms of trade shocks on the economic growth of New Zealand, Grimes (2006) finds that approximately half of the variance of New Zealand growth can be explained by the level and the volatility of the terms of trade. Borkin (2006) also concludes that terms of trade volatility are still an important driver to New Zealand GDP growth.

Other factors: Government policy and natural events

Dalziel (1999) and Hazledine (1998) argue that the weak economic performance of the New Zealand economy is also partly due to poor policy choices. They cited the 1984 reforms as one of the poor policy choices that affected the economic growth of New Zealand. Hazledine (1998) concludes that the 1984 economic reform implemented by the labour government was a failure and affected negatively on New Zealand performance. This, however appears to be a minority view. Silverstone et al. (1996), IMF (2000), OECD (1989, 2002) and Evans et al. (1996) hold that the economic reforms of 1984 had a positive impact on New Zealand's economic growth.

Contributing to the debate on policy choices on the economic performance of New Zealand, Grimes (2006) concluded that the monetary tightening policy implemented by the New Zealand government

in late 1970s, 1980s and 1990s adversely affected New Zealand growth. Conway & Orr (2000) and OECD (1979, 1980, 1983, 1985, 1999) also express similar opinions.

Michael & Sleeman (2008) while acknowledging that economic shocks remain one of the main causes of New Zealand's slow performance, indicated that 'internal shocks' also partly account for the weak economic performance of the New Zealand economy. They cited as an example the drought in the late 1990s that affected the eastern part of New Zealand. This is echoed by Conway & Orr (2000) and OECD (1999). Lattimore & Eaqub (2013) reported that the drought in the late 2000s that affected the dairy farming region in New Zealand also impacted on New Zealand's growth. Likewise, the IMF (2011), OECD (2011) and Luu (2015) note the negative effect on New Zealand's economic growth as result of the Christ church earthquake.

Risk

According to Group (2011), the New Zealand economy is vulnerable to changes in investor sentiments due to its high net foreign liability (NFL) to GDP. Steenkamp (2010) and Ding et al. (2014) also stress that the New Zealand NFL to GDP is high and as a result makes the economy vulnerable to volatility in international markets. André (2011), Bollard (2010) , Group (2011), Makin et al. (2009), OECD (1996) and Steenkamp (2010) conclude that the high NFL to GDP for the New Zealand economy is mainly due to its high rate of investment relative to domestic savings.

Economist and analysts views about apparent underperformance of the New Zealand economy are focused on the extent to which the economy has performed based upon GDP growth and NFL to GDP. However, GDP values, or their rates of change are net aggregates and overlook the costs incurred in producing the GDP. This is like focusing only on revenues and ignoring expenses in generating business income (Stigliz, 2005). As a result, the metric of GDP growth provides a very simplified view of the performance of an economy (Scott et al., 2013). In business accounting, earnings and detailed income statement data are important for entities because they provide information for stakeholders such as inventors and creditors (Dechow, 1994).

In the theory of corporate finance, metrics such as ROA that gauge performance relative to the level of assets reflect cost levels by being based on net income. Net income is the economic surplus after accounting for all input costs in building the asset base.

GDP analysis reveals just the rate of change in income or revenue levels. As a result, the analysis does not provide any information concerning what a nation should do to sustain or improve its income levels (Clarke & Islam, 2006; Lange, 2013). Sustainable income is the maximum amount of income that a nation can consume whiles ensuring that future generation can have a living standard as comparable to the present generation (Lange, 2013; Nordhaus, 1995). Business accounting refers to this in a narrow financial context as the capital maintenance principle, 'assumption' or 'concept' (Break, 1954: Gynther, 1970). It requires income measurement to be based on non-declining assets levels (Lange, 2013). A nation needs to invest and maintains its asset base if it wants to sustain its income or revenue levels. ROA is based on net income after consumption. ROA analysis also takes into account the level of assets and measures the efficiency with which assets have been utilised. As a result, ROA provides an assessment of the quantity of investment an entity requires in sustaining its future income or revenue growth.

Although the ratio NFL to GDP reveals the extent to which a nation is vulnerable, it only measures one aspect of the economic risks faced by nations. NFL to GDP, for example, does not reflect the capital structure of the economy. As a result, the ratio does not address how a nation could manage its cost of capital. In the context of a national economy, the cost of capital represents the rate of return that a nation is required to pay to foreign investors to attract capital funds (Modigliani & Miller, 1958; Scott et al., 2013; Steve & Chris, 2003). This form of the cost of capital concept is also the basis upon which a nation can assess the viability of new projects (Easley & O'hara, 2004; Steve & Chris, 2003). In business accounting, the gearing ratio reflects the capital structure of entities. In macroeconomic accounting, its counterpart gearing ratio, provides national policy makers with a parallel metric to control a nation's cost of capital. This is important in assess the viability of new projects at the national level (Baby, 2016; Nasimi, 2016).

Drawing from these advantages of the return on assets and the gearing ratio over the GDP growth rate and NFL to GDP as measures of economic performance, in the next section of this thesis, New Zealand economic performance is analysed using the rate of return and gearing ratio in a Du Pont ratio analysis framework.

7. 3 Financial Statement Analysis

This section of the thesis analyses the New Zealand economic performance based upon the financial statement ratios computed for the New Zealand economy over the 42-year period.

Return on Assets (ROA)

Figure 8 shows the sequence plot of the return on assets defined as net income divided by assets after deducting depreciation for the New Zealand economy over the 42-year period from 1970 to 2011. This is the basic metric for assessing the performance of an economic entity. The ROA for New Zealand averaged about 6% until 1988 then dropped to an average of around 2% in the remainder of the period to the end of 2011. This is surprising given the majority view among economists that the economic reforms of the Douglas era improved the efficiency of the New Zealand economy, making it more internationally competitive (Silverstone et al., 1996; IMF, 2000; OECD, 1989,2002 : Evans et al., 1996)

The time sequence of ROA is disaggregated by the Du-Pont system into the two components of net profit margin (NPM) and asset turnover ratio (ATO). The NPM is defined as net income divided by sales and the ATO is defined as sales divided by assets after deducting depreciation. Multiplying these together gives the ROA. In this sense, the NPM and the ATO 'explain' the ROA.

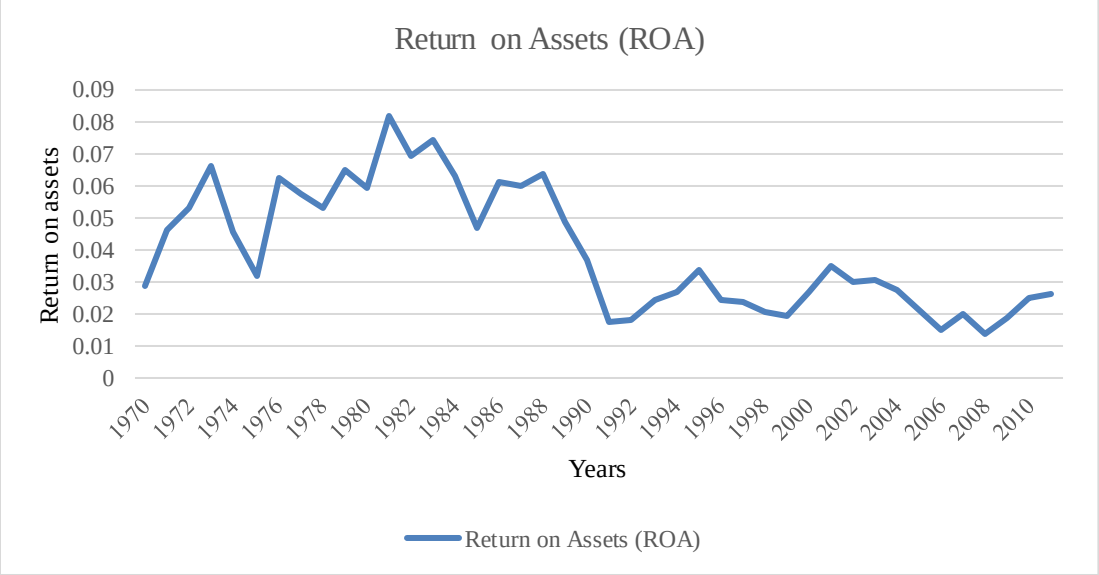


Figure 8: Rate of return on assets for the New Zealand economy from 1970 to 2011

The sequence plot of the net profit margin, for the New Zealand economy from 1970 to 2011 is shown in Figure 9. The overall trend in the NPM for the New Zealand economy over this period is downwards. As with ROA, there are two distinct periods: the first up to 1990, the second afterwards. The average NPM in the earlier period, at approximately 6%, is about twice that in the later period, at approximately 3%.

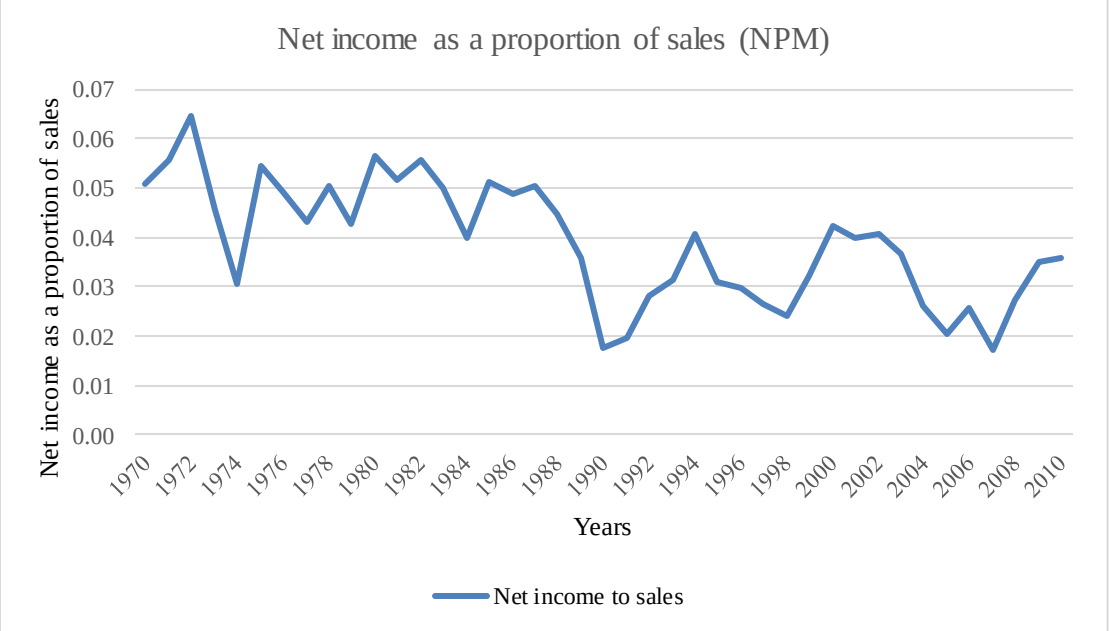


Figure 9: Net profit margin for the New Zealand economy from 1970 to 2011

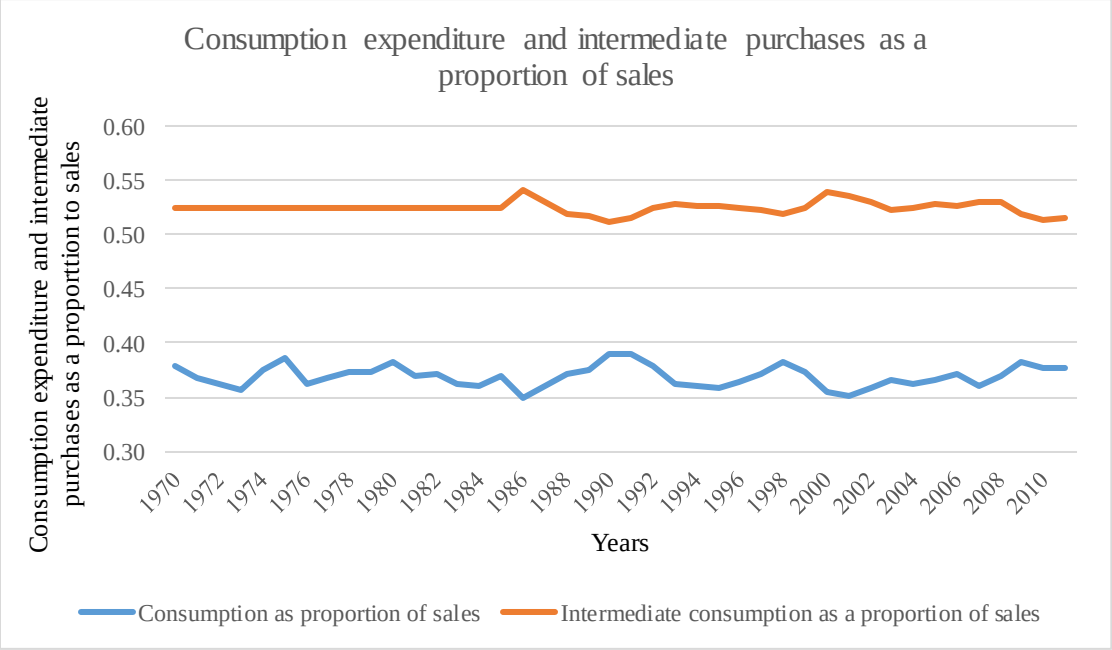
The time sequence of the net profit margin for the New Zealand economy over the entire period is mainly a function of New Zealand's terms of trade, productivity, foreign income, consumption and depreciation patterns. With respect to the terms of trade, these were less favourable during the 1970s and 1980s that in later years of the period from 1970-2011. The terms of trade in 2011 are cited as being favourable historically (Statistics New Zealand, 2012). Figure 10 shows the terms of trade as an index produced by Statistics New Zealand. The terms of trade do not therefore explain the falling value of the NPM.

Figure 10: New Zealand's terms of trade 1960 and 2012

Breaking down the NPM into its component parts, i.e. intermediate consumption, foreign income, consumption and depreciation, as ratios of sales produces Panel A and B of Figure 11. It can be seen from these that the major contribution to the behaviour of the NPM falling in the period after 1988 is made by the increasing income paid abroad and the higher impact of the depreciation allowance in later years of the period. The consumption ratio relative to sales does not show a pattern that would explain that of NPM.

The ratio of intermediate purchases to sales is based upon assuming the 'cost of sales' in the period to 1987 is similar to the average of the following period when data on intermediate consumption first became available and therefore cannot explain the pattern in NPM.

Panel A



Panel B

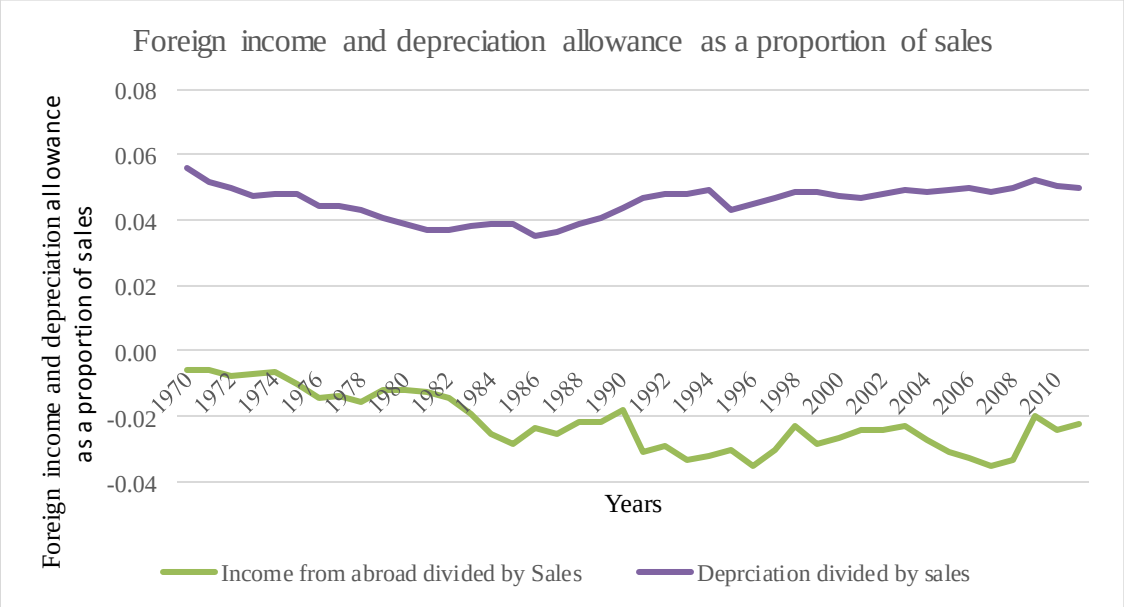


Figure 11: Consumption expenditure, intermediate purchases, foreign income and depreciation allowances as a proportion of sales

The sequence plot of the asset turnover ratio, for the New Zealand economy from 1970 to 2011 is shown in Figure 12. The asset turnover (ATO) ratio for New Zealand was higher during the earlier years of the period 1970 and 1988 (100%) but declined steadily over time, reaching 73% by the end of 2011. The decline in the asset turnover ratio for the New Zealand economy measures the efficiency with which assets are utilised and reflects a reduction in the growth rate of the capital productivity index.

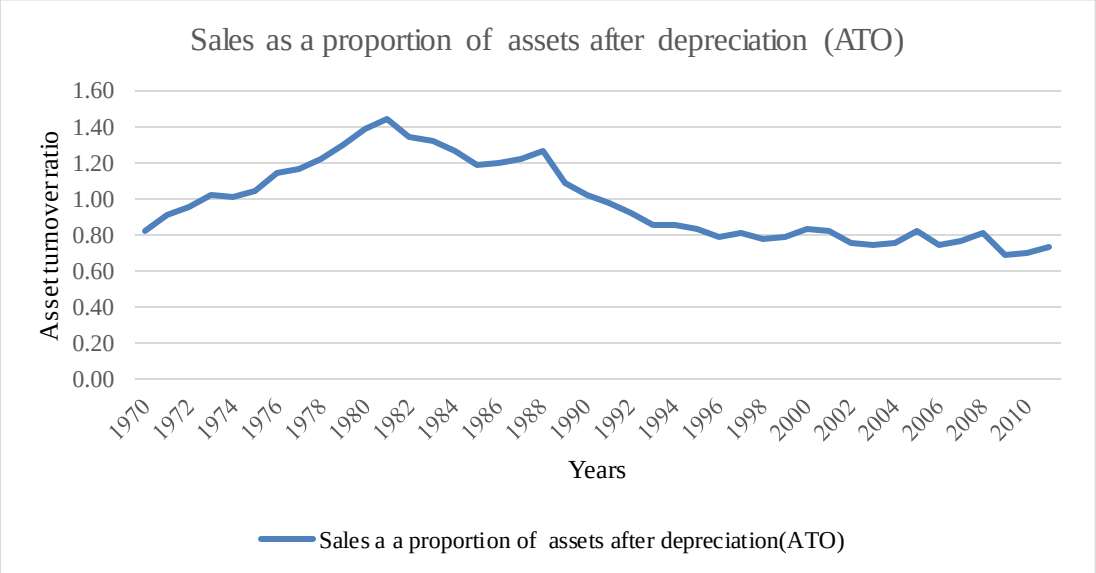


Figure 12: Asset turnover ratio (ATO) for the New Zealand economy from 1970 to 2011

The ATO, like the NPM, also shows similar patterns to those in the ROA. The pattern of the decrease in the ATO after 1988 is not due to the depreciation allowance. This can be seen by computing the ATO based upon the undepreciated value of assets. This metric is displayed graphically in Figure 13.

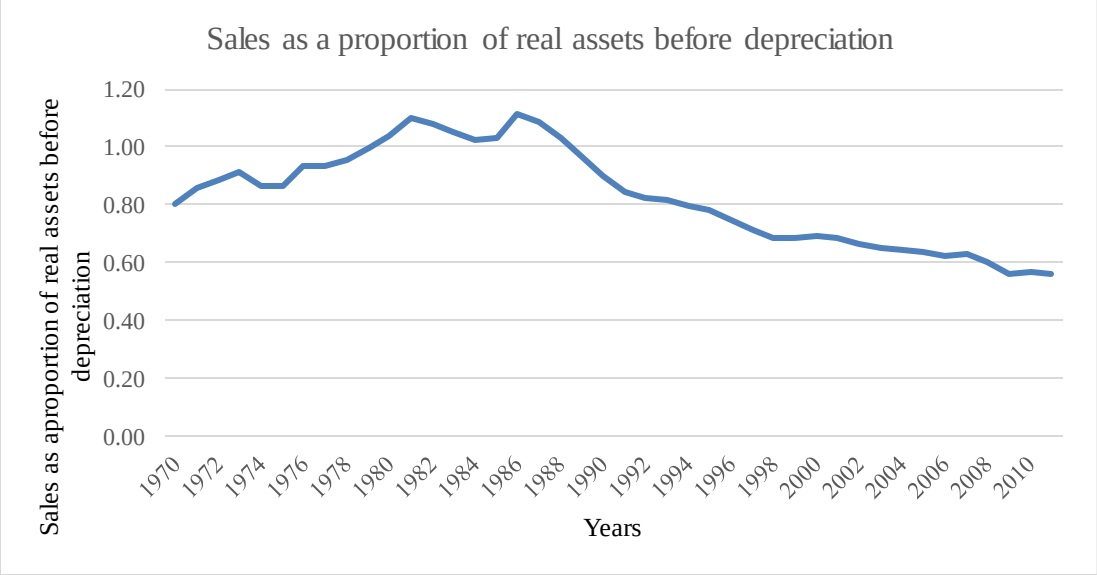


Figure 13: Sales as a proportion of real assets before depreciation

Figure 13 suggests that the depreciation allowance itself does not explain the fall in the ROA after 1988. From figure 8 through 13 it seems, therefore that the overall decline in the ROA after 1988 is due to two main factors: (i) increasing levels of property income paid abroad, perhaps as a result of the foreign capital required to fund the restructure at that time; and (ii) a lower efficiency with which the new assets are utilised, as indicated by the falling ATO. The ATO is an alternative measure of general productivity, a ratio not in the form of an index, and therefore easier to relate to other underlying measures.

It might be suspected that the patterns in the ROA are artefacts of the way assets values are measured, since if, for example they were undervalued in the early part of the period to 1988 and overvalued in the later part of the period, after 1988, this would create a bias toward seeing the patterns shown in the graphs of the time sequence of ROA. However, this does not seem to be the case, as far as data is available to investigate this possibility. Statistics New Zealand provides estimates of the value of New Zealand's capital stock from 1987 onwards and these are close to those computed by the methods explained in chapter 5. Figure 14 shows how these two different estimates of the value of New Zealand's produced assets are compared. They are visually parallel over time so that whichever

estimate is used the relative pattern of ROA over time would be the same, if the assumption about the regularity of the relation between intermediate consumption and sales before 1988 holds true.

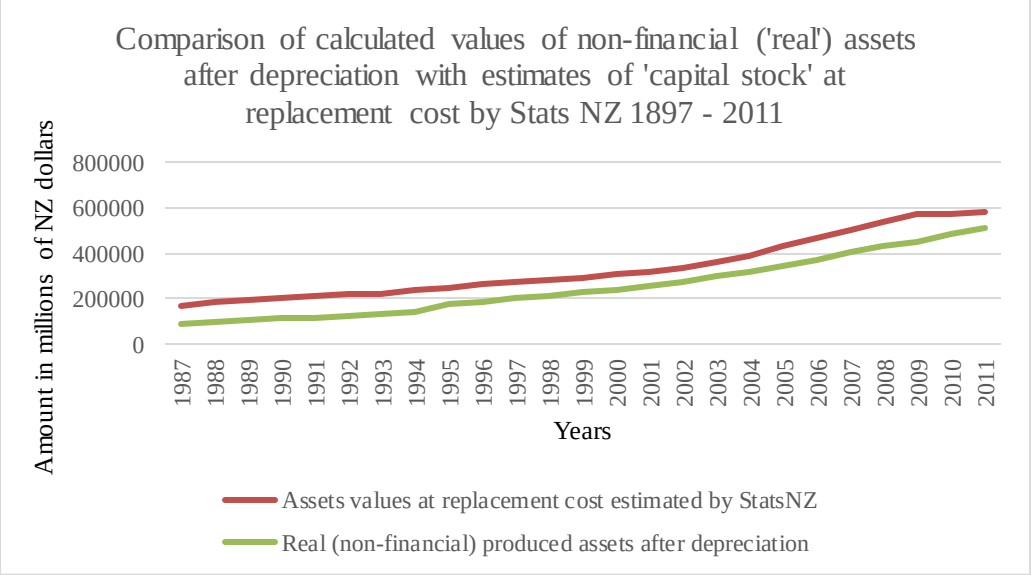


Figure 14: Comparison of real assets and capital stocks

Figure 8 through to 13 show short-term patterns in the NPM and ATO that reflect the events discussed occurring over the period 1970 – 2011. For instance, a sharp rise in ROA between 1970 and 1973 was due to NPM and ATO rising by 84% and 25%, respectively reflecting improvements in the terms of trade and productivity. The rise in the terms of trade at this time is associated with the impact of the 1971 - 1973 commodity price boom that occurred on world markets (OECD, 1975). The sharp fall in ROA that followed between 1973 and 1975 was caused by a fall in the NPM of approximately the same percent, following the collapse of world market prices in 1974 (Skilling, 2001: Treasury, 2006) and the impact of the 1973 - 1974 oil price rises resulting from after-effects of the Arab-Israeli war (Lattimore & Eaqub, 2013; Lattimore et al., 2009; Michael & Sleeman, 2008).

Between 1985 and 1991, New Zealand's ROA dropped sharply by nearly 64%. NPM and ATO declined by approximately 57% and 15% respectively. This sharp fall in NPM and ATO over the period is associated with the impact of the economic reforms between 1985 and 1991 (Lattimore &

Eaqub, 2013), the 1987 share market crash (Bascand & Humphries, 1988; Brash, 2001; Briggs, 2003; Evans et al., 1996; Hodgetts, 1989; OECD, 1989, 1990; NZIER, 2000) and the 1990 oil price hike (Michael & Sleeman, 2008).

After the structural reforms, New Zealand ROA fell between 1995 and 1999. NPM declined by about 47% contemporaneously with the Asian Financial Crisis (Lattimore & Eaqub, 2013; Michael & Sleeman, 2008) and the 1998 - 1999 drought that affected the eastern part of New Zealand. ATO remained stable in this period.

From 2001 through to the end of 2004, ROA for the New Zealand economy remained stable averaging approximately 3% but then dropped to about 2%. The NPM fell over the same period by about 51%, whereas the ATO ratio remained stable averaging about 34%. The decline in the NPM over the period occurred at the time of the GFC and the 2006/2007 drought that affected the dairy farming regions of New Zealand.

In summary, the ROA declined in the period following the structural reforms of the late 1980s. The main underlying reasons for this are the growing level of property income paid abroad and falling productivity as indicated by a declining asset turnover ratio. Both of these causes, and particularly the latter, are likely over time to lead to increased foreign debt levels, affecting the risk profile of the New Zealand economy. This issue is considered next.

Return on Equity (ROE)

Figure 15 shows the sequence plot of the equity multiplier (EM), defined as total assets divided by capital after depreciation, for the New Zealand economy over the 42-year period. The equity multiplier for the New Zealand economy, which is related to the inverse ratio of what in a business context is frequently referred to as ‘gearing’ or ‘leverage’, increased from 116% in 1970 to 200% in 2011. The time pattern of the EM means that the New Zealand economy became progressively more dependent on foreign finance, particularly following the economic reforms of the late 1980s.

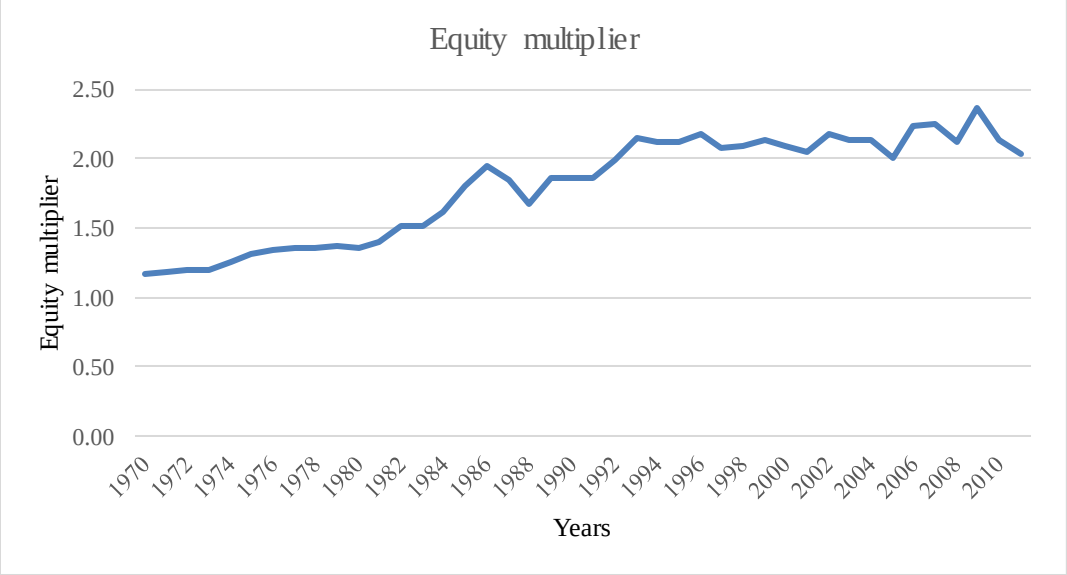


Figure 15: Equity multiplier for the New Zealand economy from 1970 to 2011

The sequence plot of the ROE, resulting from multiplying ROA by the equity multiplier, for the New Zealand economy over the 42-year period is shown in Figure 16. Over time, New Zealand's ROE behaves similarly to the ROA. The ROE rose by about 75% between 1970 and 1973, and remained at a level of about 9% between 1973 and 1986. After this, it decreased steadily, to just over 5% by the end of 2011.

Financial Risk

The sequence plot of the gearing ratio, defined as net financial liabilities divided by the sum of net financial liabilities and capital after depreciation, for the New Zealand economy over the 42-year period is shown in Figure 17. This form of the gearing ratio has the advantage of lying between 0 and 1, with values close to zero being low gearing and low financial risk and values close to 1 being highly geared and high financial risk. Gearing or leverage under this definition for the New Zealand economy increased from 12% in 1970 to 33% in 2011.

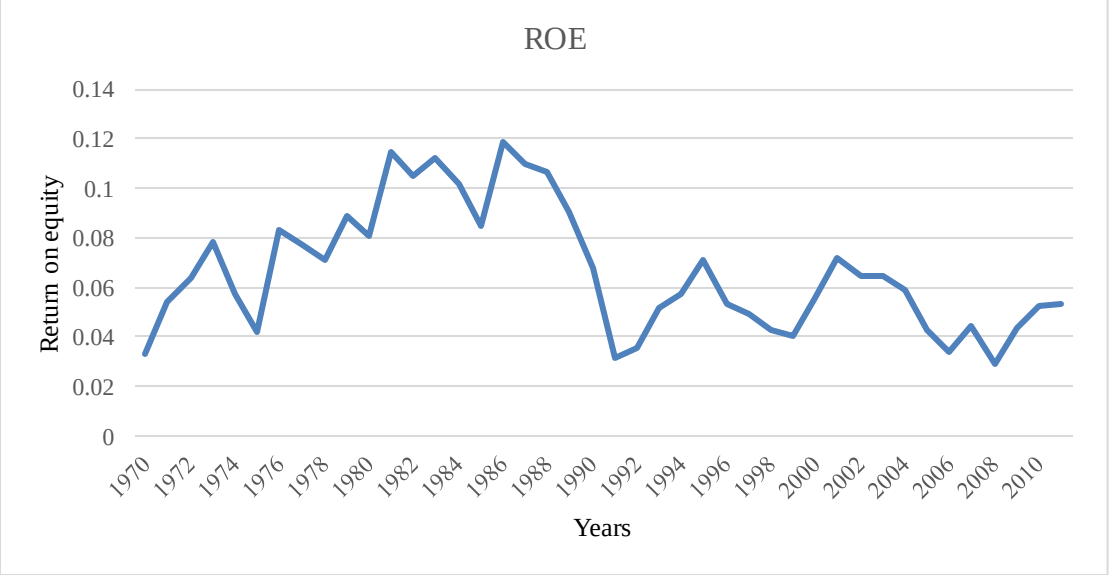


Figure 16: Return on equity for the New Zealand economy from 1970 to 2011

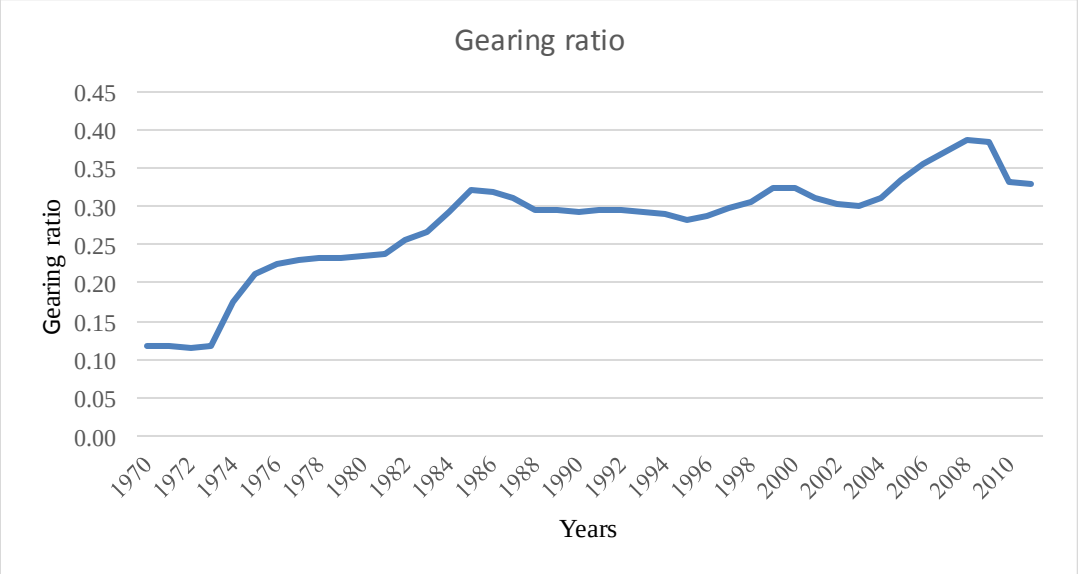


Figure 17: Gearing ratio for the New Zealand economy from 1970 to 2011

Nearly all of the increase in gearing took place before the economic reforms of the late 1980s. The gearing ratio has remained fairly stable since then with a fluctuation upwards at the time of the GFC. This suggests that the damage to the New Zealand in terms of risk had already been done by the time of the reforms and that these arrested the worsening financial risk situation.

The lower rates of return in the post-reform era can be seen as a legacy of the pre-reform economic policies. The economic reforms of the 1980s successfully addressed a rapidly developing financial risk profile of the New Zealand economy and disciplined fiscal and monetary policies have contained this risk in subsequent years. However, the resulting increased costs of foreign finance and sluggish productivity in the presence of relatively high consumption rates, akin to 'overheads being too high in a business context, have led to declining aggregate returns.

The effect of the declining rates of return on assets and equity in the longer term can be seen in the investment savings gap in Figure 18. These correspond to the findings in Bollard (2010), Group (2011), OECD (1996) and Steenkamp (2010). High New Zealand consumption rates prevent increases in national wealth being used to reduce debt levels.

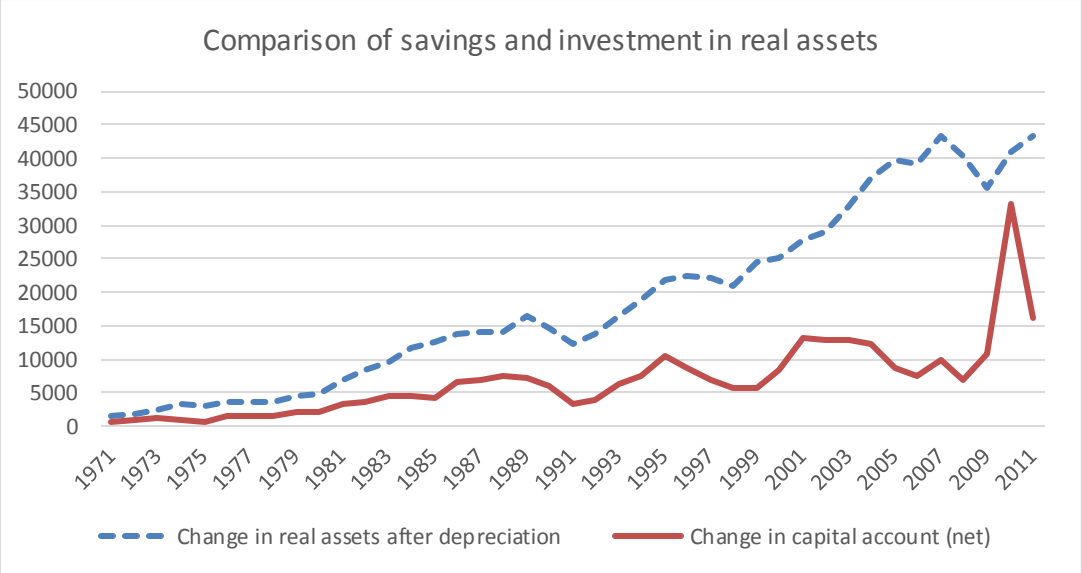


Figure 18: Levels of New Zealand savings and investment 1970 to 2011

Some prior research has a positive relationship between gearing and economic performance (Akhtar et al., 2012; Aliu, 2010; Rehman, 2013). However, the use of debt has not translated into higher returns on investment for the New Zealand economy over the period studied. In fact, the rate of return and gearing ratios are inversely related (see Figure 19).

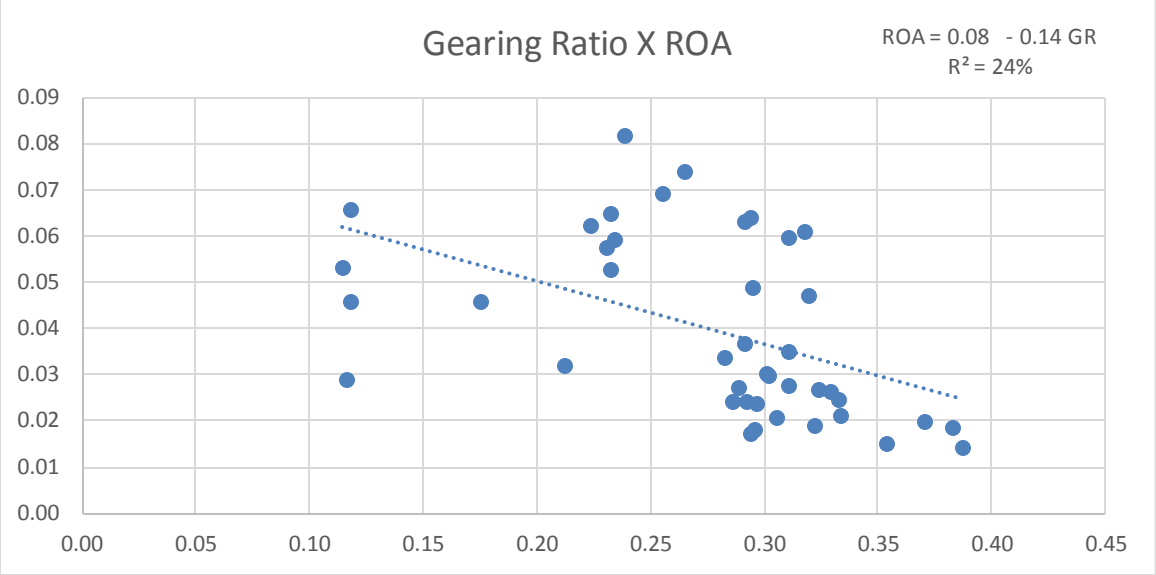


Figure 19: Inverse relationship between New Zealand's ROA and its gearing ratio

The relationship between the ROA and the gearing ratio for the New Zealand economy suggests that assets financed with foreign debt have low rates of return, reflecting poor investment choices. This point is discussed further in the next Section.

7.4. New Zealand's use of external debt: Insights from the theory of corporate finance.

In finance, it is normally expected that financing by debt is cheaper than financing by equity, taken into account the effects of risk and taxation (Modigliani& Miller, 1958). If the cost of debt is roughly estimated as net foreign income paid abroad divided by capital after depreciation, comparison of this metric with ROE generally reflects this expectation, see Figure 20. However, the period after the economic reforms shows the cost of debt estimated in this way to be much closer to the cost of equity, interpreted as ROE, than in the period before the reforms.

In several years, the cost of debt exceeds the cost of equity by the measures used here. In finance, investments in projects should be undertaken only if their internal rates of return exceed the cost of capital

The pattern of the cost of debt and equity over time displayed in Figure 20 suggests that this principle has not always been applied in New Zealand in recent years.

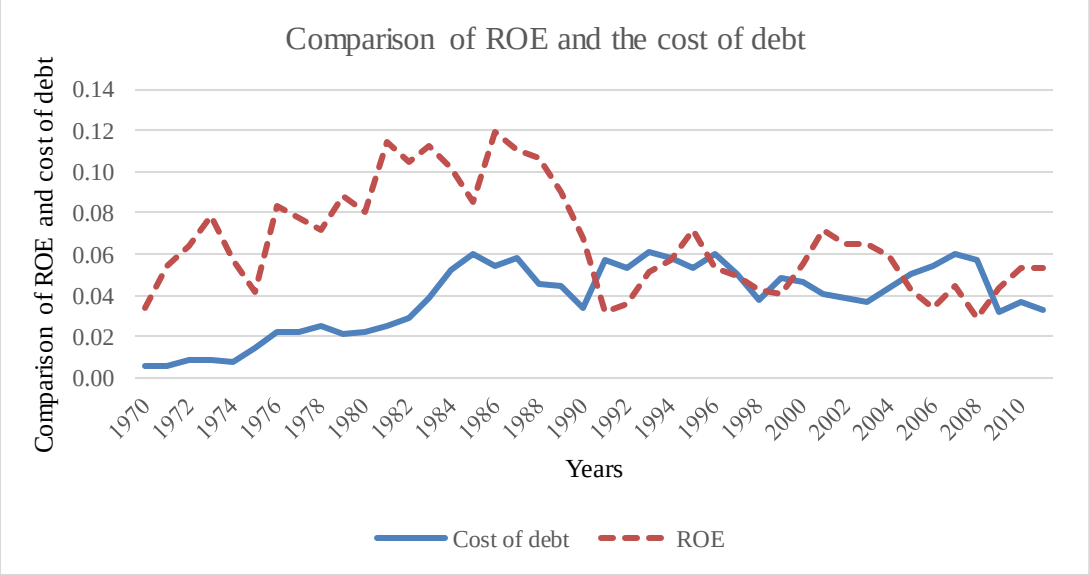


Figure 20: Comparison between ROE and Cost of debt for the New Zealand economy from 1970 to 2011

From Figure 20, the stabilised level of debt relative to assets after the reforms of about one third, suggests this is held by policy makers to be a sustainable equilibrium, even optimum, capital structure ratio for the New Zealand economy at the present time. In the long-run low level of ROE is not a healthy recipe for economic growth. However, in "pecking order theory" asymmetric information between managers and investors guides their choices in raising finance. Funding assets from savings would be preferred, in risk terms, to 'borrowing' in the form of foreign debt or equity interests (Myers, 1984; Cole, 2013; Frank & Goyal, 2009). The theory postulates that, of all these sources of finance available to entities, entities should finance its investment by first using retained earnings or savings followed by debt and equity (Frank & Goyal, 2009; Groen, 2016; Myers, 1984; Naseem et al., 2017; Steve & Chris, 2003). In a macroeconomic context, a nation such as New Zealand should gear up to its optimum capacity if its savings are insufficient in financing its investment (Steve & Chris, 2003). The problem for New Zealand's long-term standard of living is that its savings levels force increased levels of debt to finance new projects, some of which at least appear to have negative net present value. Under current conditions, the only sure way to remedy this problem is to reduce the New Zealand consumption rate. The risk is that rising finance costs on international markets from their current low levels will force this type of adjustment.

7.5 Institutional reports and academic journals

Previous research has highlighted a number of key factors held to be important to New Zealand's prosperity: the terms of trade, productivity and rising debt obligations. The analyses of New Zealand's reconstructed financial statements point to productivity and rising debt obligations as important in understanding the long-term health of its economy.

Research by the IMF (2000), Borkin (2006) , OECD (1985), Conway & Orr, (2000), Mawson (2002) , Scott (1996), Galt (2000), Lattimore & Eaqub (2013), Easton (1997), Carroll (2012), Philpott (1991) Michael & Sleeman (2008), Grimes (2006) and Borkin (2006) has argued that New Zealand's economic growth has been affected at various times by the terms of trade. However, while clearly affecting the economy in the short run, the terms of trade have not been particularly significant in the longer term. The terms of trade overall have been relatively stable over time and they are not a factor in explaining the behaviour of the market forces side of the Du Pont analysis of the ROA and ROE, embodied in the NPM.

An IMF (2000) report found that the New Zealand economic performance in the early 1980s was adversely affected by low capital productivity resulting from bad asset choices. The asset turnover ratio (ATO) as measure of the efficient utilization of assets and an alternative estimate of general productivity return on asset (ROA), show this to be an important long run factor in explaining the behaviour of the returns metrics between 1970 and 2011. Asset accumulation over the period prior to the economic reforms, associated with the 'think big' energy investment of the Muldoon government initiated in the early 1980s (Easton, 1997) can now be seen as raising debt levels and depressing rates of return in the following period. Evidence for this being a chief cause of the low rates of return after the economic reforms in the late 1980s lies in the increased foreign debt profile that occurred between 1974 and 1984. It seems likely that rather than the reforms in the 1980s not being effective, things might have been much worse later if they had not been carried through. Nevertheless, the analysis above does not suggest, as some have done, e.g., Silverstone et al. (1996), IMF (2000), OECD (1989, 2002) and Evans et al. (1996) that New Zealand's economic performance increased after the economic reforms. It comes closer to Dalziel (1999) and Hazledine (1998) and Lattimore & Eaqub

(2013) who report that New Zealand's economic performance declined during and after the structural reforms.

The behaviour of the ATO suggests over time that asset utilization rates are a main reason for New Zealand's economic performance appearing sluggish compared to other OECD countries. Easton (1997) and Grant (1998) report of improvement in investment quality in the New Zealand economy after the period of the economic reform. However, this is not readily supported by the patterns displayed by the ATO, which gradually declined after 1988. It tends to agree with research by Diewert & Lawrence (1999) and others who find evidence of weak capital productivity.

The financial statement analysis shows that the causes of declining asset utilization efficiency are relatively high levels of consumption in the presence of increasing levels of overseas debt and the cost of servicing these. Based on various macroeconomic indicators of economic health the New Zealand economy appears to be stable (André, 2011;Makin et al., 2009). However, the profile its financial statements present, especially with respect to gearing, is one of an economy that could be vulnerable to outside shocks, particularly in financial markets. This point is noted in recent research by Group (2011), Steenkamp (2010) and Ding et al. (2014).

7.6 Conclusion

This chapter of the thesis has analysed New Zealand economic performance based upon a DuPont analysis of ratios of data from the financial statements constructed in chapter 6. It finds that the key elements in New Zealand's economic performance are asset utilization efficiency, increased levels of gearing due to foreign debt and the ongoing cost of servicing this in the context of a relatively high national consumption rate. The next chapter summarises the findings of the dissertation, describes its limitations makes some suggestions for future research using its theory and method.

Chapter 8 Conclusion

8.1 Introduction

This chapter gives a summary of the findings of this thesis in section 7.2. Limitations of the study and future research prospects are discussed in section 7.3 and section 7.4 respectively.

8.2 Summary of thesis findings

This study modifies and applies Baydoun et al's (2015) one-sector model and estimated financial statements for the New Zealand economy form 1970 – 2011. It also analyses New Zealand's economic performance using financial ratios.

The reasons for using the financial statement approach in assessing New Zealand's economic performance relates to the general limitations of national accounting as explained in chapter 2. Among the most obvious of these limitations is the absence of values for assets in the national accounting data of most countries. This prevents calculating rate of return metrics, such as the return on assets, which are the fundamental performance for any economic process. As a result much economic analysis is founded on the central measure of GDP and its growth over time, which omits consideration of the investment base used to create wealth. New Zealand is a leading country in producing balance sheet data. However, the length of its time series of such stock data is limited at the present time. Based upon the values estimated by the Statistics New Zealand, however, the simple method proposed for estimating the value of real assets adopted in this dissertation is a sufficient and reliable way of extending such data over longer periods.

Another advantage of the financial statement approach to the presentation of NIA data is that is more clearly shows the interrelationships between assets, the accrual based value flows that they generate and the flow of funds that occurs in the settlement of debt. This makes it easier to see the connections between the behaviour of the many financial ratios that are used to judge economic success and to provide a more rounded view of the various dimensions of economic performance.

The return ratios for the New Zealand economy tracked downwards after the economic reforms in the late 1980s. Looking into the underlying movements in the data that led to this pattern in the returns ratios suggests the cause of this downturn was the result of three factors, the first of which occurred prior to the structural reforms, while the second and third remain ongoing problems with the New Zealand economy. The first was the increase in foreign indebtedness that took place in the 1970s and early 1980s, prompting the economic policies pursued by the New Zealand government in the late 1980s. This placed a burden that has remained proportionately constant since that time on the national income of payments to foreigners.

The second is the lack of any obvious improvement in the efficiency with which New Zealand's produced assets are utilized to produce sales. This is not a problem with the way depreciation is calculated in arriving at asset values because the same pattern for the asset turnover ratio persists when assets are valued before deducting accumulated depreciation. Further, the values of assets after accumulated depreciation and their time trend are similar to the estimates of assets values by Statistics New Zealand. Additionally, the intermediate consumption data used to estimate sales has a reasonably consistent, level proportional value relative to GDP over the entire period. Consequently, the asset turnover ratio reflects criticisms and concerns expressed about the productivity of New Zealand's economy but using a different metric from the usual productivity indices used in this context.

The third issue is the high rate of consumption relative to GDP. This is a well-known concern and is reflected in rates of return in this study because consumption is deducted as an expense charged against the concept of net income used. The analysis here therefore treats consumption concept differently from the NIA, in effect as an overhead expense. Much consumption is no doubt discretionary, but it has the same impact as any expense in business accounting in reducing the amount of investment available for economic growth.

In summary, therefore, these three factors are highlighted in this study as being important to the prospect for New Zealand's economic performance in terms of returns: (i) a level of debt that is not diminishing, but at the same time has remained fairly steady in proportional terms over a quite long

period; (ii) sluggish productivity in the sense defined by the asset turnover ratio; and (iii) high levels of consumption. All of these issues have been identified in the economics literature previously. The contribution of this study is identifying them as the *key* factors and in making more transparent their relationships to each other in a structured assessment of their impact on the performance of the New Zealand economy.

Another aspect considered was financial risk of the New Zealand economy. The gearing ratio was shown to be contained at or below about one-third of GDP. The maintenance of this value over a fairly long period of time indicates reasonable fiscal and monetary control of the economy by government and its agencies. However, prospective risks are apparent in the danger that world financial markets may move in such a way that New Zealand could be placed under financial stress. Analysis of this possibility was not pursued, however, due to lack of time.

One aspect of the world economy that has been discussed over a long period of time is the impact of the terms of trade on New Zealand's economic returns. No evidence was found that this has had a significant long term impact on returns. However, it is clear that this factor does sometimes have a significant short-term impact on the economy.

8.3 Limitations of the study

A limitation of the study relates to inaccuracies in the data sources. The study relies on data from the UN, the IMF, the World Bank and the Lane and Milesi-Ferretti (2007). In some instances inconsistencies were identified in the data values reported by these sources, requiring the researcher to rely on estimated values to support analysis.

The study was also constrained by time and financial resources so that a number of additional avenues of research indicated by the results of the study were unable to be pursued. These included, a treatment of natural resources as part of the asset base of New Zealand, a sector analysis, assessing the impact of prices on the results, undertaking a comparison with other countries, such as Australia, extending the framework to include environmental considerations and generally looking in more depth at the sources of data and their reliability.

8.4 Future research

Future research could be usefully undertaken to address the limitations noted above. In particular the accounting approach to the analysis of macroeconomic activity could be extended to the comparison of different countries, regions and trading blocks. The highly structured approach adopted here could be applied on an updating basis, in the same way that the approach is used in corporate accounting. Standardization of accounts, metrics and performance standards would enhance the ability of policy makers to appreciate threats and weakness in the macroeconomic environment. In addition, the framework of constructed macroeconomic financial statements provides opportunities for the development and testing of more scientifically based macroeconomic theories.

Appendices:

Appendix1: Financial statements (millions of New Zealand dollars (current cost)) - Fiscal year ending 31st march

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Balance sheet															
Produce fixed assets at current values (gross)	14432	15958	17864	20068	22779	26086	29687	33313	37254	41386	46277	53132	61225	70306	80809
Inventories	594	692	610	825	1550	1263	1322	1455	1209	1679	1646	1811	2059	2434	3545
Non-Financial assets(Investment)	**15026**	**16650**	**18474**	**20893**	**24329**	**27349**	**31009**	**34768**	**38463**	**43065**	**47923**	**54943**	**63284**	**72740**	**84354**
Financial Asset															
Accruals(Account Receivables)	0	0	0	0	0	0	0	0	0	0	0	452	3252	2708	969
Currencies	230	434	698	772	459	358	496	463	449	464	375	787	861	1177	3164
Debt(portfolio debt and other investment)	122	124	161	143	193	251	307	448	487	684	670	757	1075	1245	2858
Portfolio equity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign direct investment	30	42	44	57	69	92	146	195	242	297	411	523	648	781	1489
Financial derivatives	0	0		0	0	0	0	0	0	0	0	0	0	0	0
Financial Liabilities															
Accruals(Account Payables)	161	261	580	799	1618	1759	1528	1150	1328	1555	1100				
Debt(portfolio debt and other investment)	586	694	750	752	1286	2257	3237	4209	4619	5426	6485	9854	14987	16969	23075
Portfolio equity	0	0	0	0	0	0	0	0	0	0	0	67	136	389	818
Financial derivatives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign direct investment	1306	1448	1431	1519	1368	1366	1655	1931	1957	1857	1980	2023	2289	2292	2098
Net financial asset	-1671	-1803	-1858	-2098	-3551	-4681	-5471	-6184	-6726	-7393	-8109	-9425	-11576	-13739	-17511
Capital(gross)	**13355**	**14847**	**16616**	**18795**	**20778**	**22668**	**25538**	**28584**	**31737**	**35672**	**39814**	**45518**	**51708**	**59001**	**66843**
Notes:															
Accumulated depreciation	675	1411	2224	3125	4134	5275	6560	7990	9578	11331	13280	15503	18050	20960	24290
Net real assets	14351	15239	16250	17768	20195	22074	24449	26778	28885	31734	34643	39440	45234	51780	60064
Accumulated capital (net)	12680	13436	14392	15670	16644	17393	18978	20594	22159	24341	26534	30015	33658	38041	42553
Income statement															
Sales	12090	14293	16398	19152	21024	23654	29014	32445	36760	42869	49854	60591	68415	76291	86220
Intermediate purchases	6343	7499	8603	10048	11030	12410	15222	17022	19286	22491	26156	31789	35894	40026	45235
Sales less purchases	5747	6794	7795	9104	9994	11244	13792	15423	17474	20378	23698	28802	32521	36265	40985
Other income (net)	-69	-79	-125	-135	-132	-244	-423	-447	-566	-508	-592	-753	-983	-1485	-2209
Gross income	**5678**	**6715**	**7670**	**8969**	**9862**	**11000**	**13369**	**14976**	**16908**	**19870**	**23106**	**28049**	**31538**	**34780**	**38776**
Consumption expenditure	4580	5253	5944	6835	7899	9135	10508	11948	13737	15960	19020	22394	25461	27610	31127
Depreciation	675	736	812	901	1009	1141	1285	1430	1588	1753	1949	2223	2547	2910	3330
Net income	**423**	**726**	**914**	**1233**	**954**	**724**	**1576**	**1598**	**1583**	**2157**	**2137**	**3432**	**3530**	**4260**	**4319**
Current transfers abroad	107	30	43	45	20	25	9	18	-18	25	56	49	113	123	193
Capital transfers abroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net savings	**530**	**756**	**957**	**1278**	**974**	**749**	**1585**	**1616**	**1565**	**2182**	**2193**	**3481**	**3643**	**4383**	**4512**
Fund/ Cash flow statement															
Net Savings	**530**	**756**	**957**	**1278**	**974**	**749**	**1585**	**1616**	**1565**	**2182**	**2193**	**3481**	**3643**	**4383**	**4512**
Revaluations and other adjustments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Depreciation	675	736	812	901	1009	1141	1285	1430	1588	1753	1949	2223	2547	2910	3330
Operating funds flow	**1205**	**1492**	**1769**	**2179**	**1983**	**1890**	**2870**	**3046**	**3153**	**3935**	**4142**	**5704**	**6190**	**7293**	**7842**
Expenditure on fixed assets	-1366	-1624	-1824	-2419	-3436	-3020	-3660	-3759	-3695	-4602	-4858	-7020	-8341	-9456	-11614

Increase/ Decrease in loans	0	106	19	20	484	913	924	831	371	610	1073	3282	4815	1812	4493
Increase/decrease in accruals	0	100	315	219	819	141	235	-378	178	227	-455	-1552	-2800	544	1739
Increase/ in equity instruments	0	130	-19	75	-163	-25	-231	227	-21	-155	9	-2	210	123	-473
Increase/decrease currency	**-161**	**204**	**260**	**74**	**0**	**-101**	**138**	**-33**	**-14**	**15**	**-89**	**412**	**74**	**316**	**1987**

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Balance sheet															
Produce fixed assets at current values (gross)	93445	106566	120977	135035	150284	165207	177731	190823	205858	223605	244205	265744	287147	307926	330851
Inventories	3391	3979	3566	3452	4741	4587	4499	5123	6555	7721	8903	9712	10529	10799	12336
Non-Financial assets(Investment)	**96836**	**110545**	**124543**	**138487**	**155025**	**169794**	**182230**	**195946**	**212413**	**231326**	**253108**	**275456**	**297676**	**318725**	**343187**
Financial Asset															
Accruals(Account Receivables)	6044	7956	6058	0	11805	8952	11470	25239	41287	42829	47896	61379	51271	44284	33711
Currencies	3244	7232	5542	4343	5062	6922	5114	5733	6176	6254	6720	8661	6732	7854	8419
Debt(portfolio debt and other investment)	4039	6753	8103	8194	7600	8840	6863	6567	5613	4764	4672	7725	6941	9261	14813
Portfolio equity	0	0	0	360	722	1049	1562	1627	3083	3653	4927	5217	7565	10976	15962
Foreign direct investment	2301	3604	4258	4314	7381	10029	12410	10947	12552	14975	16680	11495	10331	15217	18894
Financial derivatives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Financial Liabilities															
Accruals(Account Payables)				133											
Debt(portfolio debt and other investment)	32536	41933	43937	38992	44850	46443	44182	48688	51796	54421	54931	62225	62044	75498	76378
Portfolio equity	2319	5215	3377	2972	4174	3009	4065	5025	9543	10259	12176	14121	13839	12855	14934
Financial derivatives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign direct investment	2770	3218	3748	3228	14855	19591	24262	33475	46378	49180	58051	66778	60959	58043	66779
Net financial asset	-21997	-24821	-27101	-28114	-31309	-33251	-35090	-37075	-39006	-41385	-44263	-48647	-54002	-58804	-66292
Capital(gross)	**74839**	**85724**	**97442**	**110373**	**123716**	**136543**	**147140**	**158871**	**173407**	**189941**	**208845**	**226809**	**243674**	**259921**	**276895**
Notes :															
Accumulated depreciation	28126	32486	37423	42922	49031	55737	62944	70675	79007	88049	96565	105821	115781	126394	137708
Net real assets	68710	78059	87120	95565	105994	114057	119286	125271	133406	143277	156543	169635	181895	192331	205479
Accumulated capital(net)	46713	53238	60019	67451	74685	80806	84196	88196	94400	101892	112280	120988	127893	133527	139187
Income statement															
Sales	99512	123491	135498	142529	150627	152605	153323	161071	172879	184331	197368	206274	212556	217560	234177
Intermediate purchases	52209	66721	71681	73882	77976	78137	79000	84439	91377	97010	103981	108313	110937	112922	122999
Sales less purchases	47303	56770	63817	68647	72651	74468	74323	76632	81502	87321	93387	97961	101619	104638	111178
Other income (net)	-2810	-2908	-3477	-3097	-3298	-2735	-4776	-4703	-5752	-5955	-5999	-7263	-6399	-4979	-6676
Gross income	**44493**	**53864**	**60340**	**65550**	**69353**	**71733**	**69547**	**71929**	**75750**	**81366**	**87388**	**90698**	**95220**	**99659**	**104502**
Consumption expenditure	36694	43179	48793	52859	56506	59551	59666	61046	62544	66515	70852	75028	78961	83322	87545
Depreciation	3836	4360	4937	5499	6109	6706	7207	7731	8332	9042	8516	9256	9960	10613	11314
Net income	**3963**	**6325**	**6610**	**7192**	**6738**	**5476**	**2674**	**3152**	**4874**	**5809**	**8020**	**6414**	**6299**	**5724**	**5643**
Current transfers abroad	197	280	259	293	330	221	222	182	290	220	233	849	551	297	426
Capital transfers abroad	0	-78	-88	-53	166	424	494	666	1040	1463	2135	1445	55	-387	-409
Net savings	**4160**	**6527**	**6781**	**7432**	**7234**	**6121**	**3390**	**4000**	**6204**	**7492**	**10388**	**8708**	**6905**	**5634**	**5660**
Funds/Cash flow statement															
Net Savings	**4160**	**6527**	**6781**	**7432**	**7234**	**6121**	**3390**	**4000**	**6204**	**7492**	**10388**	**8708**	**6905**	**5634**	**5660**
Depreciation	3836	4360	4937	5499	6109	6706	7207	7731	8332	9042	8516	9256	9960	10613	11314
Revaluations and other adjustments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating funds flow	**7996**	**10885**	**11718**	**12931**	**13343**	**12827**	**10597**	**11731**	**14536**	**16534**	**18904**	**17964**	**16865**	**16247**	**16974**
Expenditure on fixed assets	-12482	-13709	-13998	-13944	-16538	-14769	-12436	-13716	-16467	-18913	-21782	-22348	-22220	-21049	-24462
Increase/ Decrease in loans/debt	8280	6683	654	-5036	6452	353	-284	4802	4062	3474	602	4241	603	11134	-4672
Increase/decrease in accruals	-5075	-1912	1898	6191	-11938	2853	-2518	-13769	-16048	-1542	-5067	-13483	10108	6987	10573
Increase/ decrease in equity instruments	1361	2041	-1962	-1341	9400	596	2833	11571	14360	525	7809	15567	-7285	-12197	2152
Increase/ in currency	**80**	**3988**	**-1690**	**-1199**	**719**	**1860**	**-1808**	**619**	**443**	**78**	**466**	**1941**	**-1929**	**1122**	**565**

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Balance sheet												
Produce fixed assets at current values (gross)	354485	380513	408503	440197	475551	514114	553092	594992	634185	671022	711032	753190
Inventories	13755	15641	16735	17994	19638	20738	20806	22391	23588	22264	23126	24409
Non-Financial assets(Investment)	**368240**	**396154**	**425238**	**458191**	**495189**	**534852**	**573898**	**617383**	**657773**	**693286**	**734158**	**777599**
Financial Asset												
Accruals(Account Receivables)	12992	5357	25523	27092	30727	11965	22490	8525	0	24560	18311	0
Currencies	8699	8479	10731	10480	10481	12630	21694	23468	15724	24964	23209	21534
Debt(portfolio debt and other investment)	21285	30988	37047	33896	32977	23592	30308	34935	28742	43184	44806	49402
Portfolio equity	19333	28167	28080	31191	34339	36377	46911	50458	27817	48047	49279	41869
Foreign direct investment	18690	17068	20379	20464	21057	16769	20364	21591	19847	22191	22978	23852
Financial derivatives	9441	5856	7533	8056	5917	3917	6401	9881	20260	16194	17911	20948
Financial Liabilities												
Accruals(Account Payables)									20737			1198
Debt(portfolio debt and other investment)	89118	103050	118994	111449	121787	114883	147673	161945	136883	191675	185692	173797
Portfolio equity	10086	9919	12221	15439	18222	16318	18224	17053	8164	14792	12819	11362
Financial derivatives	7167	6280	8947	9413	7854	5046	7996	9677	19073	18687	18437	21355
Foreign direct investment	54934	49423	64431	75585	77575	73191	92270	92980	74067	104814	97125	93214
Net financial asset	-70865	-72757	-75300	-80707	-89940	-104188	-117995	-132797	-146534	-150828	-137579	-143321
Capital(gross)	**297375**	**323397**	**349938**	**377484**	**405249**	**430664**	**455903**	**484586**	**511239**	**542458**	**596579**	**634278**
Notes :												
Accumulated depreciation	149703	162451	176031	190563	206179	222945	240722	259528	279220	299546	320464	342022
Net real assets	218537	233703	249207	267628	289010	311907	333176	357855	378553	393740	413694	435577
Accumulated capital (net)	147672	160946	173907	186921	199070	207719	215181	225058	232019	242912	276115	292256
Income statement												
Sales	254801	271568	282729	297175	319795	339892	355492	387899	395051	389846	414303	433932
Intermediate purchases	137293	145244	149909	155151	167757	179318	186829	205638	209490	202044	212673	223632
Sales less purchases	117508	126324	132820	142024	152038	160574	168663	182261	185561	187802	201630	210300
Other income (net)	-6834	-6587	-6747	-6874	-8639	-10501	-11616	-13544	-13176	-7773	-10115	-9666
Gross income	**110674**	**119737**	**126073**	**135150**	**143399**	**150073**	**157047**	**168717**	**172385**	**180029**	**191515**	**200634**
Consumption expenditure	90494	95465	101194	108573	116042	124474	131995	139972	145868	149046	156012	163503
Depreciation	11995	12748	13580	14532	15616	16766	17777	18806	19692	20326	20918	21558
Net income	**8185**	**11524**	**11299**	**12045**	**11741**	**8833**	**7275**	**9939**	**6825**	**10657**	**14585**	**15573**
Current transfers abroad	482	241	124	242	305	141	644	698	854	581	-176	-304
Capital transfers abroad	-182	1509	1538	727	103	-325	-457	-760	-718	-345	18794	872
Net savings	**8485**	**13274**	**12961**	**13014**	**12149**	**8649**	**7462**	**9877**	**6961**	**10893**	**33203**	**16141**
Fund/ Cash flow statement												
Net Savings	**8485**	**13274**	**12961**	**13014**	**12149**	**8649**	**7462**	**9877**	**6961**	**10893**	**33203**	**16141**
Revaluations and other adjustments	0	0	0	0	0	0	0	0	0	0	0	0
Depreciation	11995	12748	13580	14532	15616	16766	17777	18806	19692	20326	20918	21558
Operating fund flow	**20480**	**26022**	**26541**	**27546**	**27765**	**25415**	**25239**	**28683**	**26653**	**31219**	**54121**	**37699**
Expenditure on fixed assets	-25053	-27914	-29124	-32953	-36998	-39663	-39046	-43485	-40390	-35513	-40872	-43441
Increase/ Decrease in loans	6268	4229	9885	-4394	11257	2481	26074	9645	-18869	40350	-7605	-16491
Increase/decrease in accruals	20719	7635	-20126	-1569	-3635	18762	-10525	13965	17579	-33614	6249	19509
Increase/decrease in equities	-22134	-10192	15076	11119	1612	-4846	7322	-7034	7283	6798	-13648	1049
Increase/decrease in currency	**280**	**-220**	**-2252**	**-251**	**1**	**2149**	**9064**	**1774**	**-7744**	**9240**	**-1755**	**-1675**

Appendix 2: DuPont Analysis

Year	*1970*	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*
Net Profit Margin	0.03	0.05	0.06	0.06	0.05	0.03	0.05	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.04	0.05	0.05	0.05	0.04	0.04
Asset Turnover Ratio	0.82	0.90	0.96	1.02	1.01	1.04	1.14	1.16	1.22	1.29	1.38	1.44	1.34	1.32	1.26	1.18	1.19	1.22	1.26	1.09	1.02
ROA	**0.03**	**0.05**	**0.05**	**0.07**	**0.05**	**0.03**	**0.06**	**0.06**	**0.05**	**0.07**	**0.06**	**0.08**	**0.07**	**0.07**	**0.06**	**0.05**	**0.06**	**0.06**	**0.06**	**0.05**	**0.04**
Equity Multiplier	1.16	1.18	1.19	1.20	1.26	1.31	1.34	1.35	1.36	1.36	1.36	1.40	1.52	1.52	1.61	1.81	1.95	1.85	1.67	1.86	1.85
ROE	**0.03**	**0.05**	**0.06**	**0.08**	**0.06**	**0.04**	**0.08**	**0.08**	**0.07**	**0.09**	**0.08**	**0.11**	**0.10**	**0.11**	**0.10**	**0.08**	**0.12**	**0.11**	**0.11**	**0.09**	**0.07**
Year	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*
Net Profit Margin	0.02	0.02	0.03	0.03	0.04	0.03	0.03	0.03	0.02	0.03	0.04	0.04	0.04	0.04	0.03	0.02	0.03	0.02	0.03	0.04	0.04
Asset Turnover Ratio	0.98	0.92	0.86	0.85	0.83	0.78	0.80	0.78	0.79	0.82	0.82	0.75	0.75	0.75	0.81	0.74	0.77	0.80	0.68	0.70	0.73
ROA	**0.02**	**0.02**	**0.02**	**0.03**	**0.03**	**0.02**	**0.02**	**0.02**	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.02**	**0.02**	**0.02**	**0.01**	**0.02**	**0.02**	**0.03**
Equity Multiplier	1.86	1.99	2.14	2.12	2.11	2.18	2.07	2.10	2.14	2.09	2.05	2.18	2.13	2.13	2.01	2.24	2.25	2.12	2.36	2.14	2.03
ROE	**0.03**	**0.04**	**0.05**	**0.06**	**0.07**	**0.05**	**0.05**	**0.04**	**0.04**	**0.06**	**0.07**	**0.06**	**0.06**	**0.06**	**0.04**	**0.03**	**0.04**	**0.03**	**0.04**	**0.05**	**0.05**

Appendix 3: Cost of Debt

Year	*1970*	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*
Cost of debt	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.04	0.05	0.06	0.05	0.06	0.05	0.04	0.03
Year	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*
Cost of debt	0.06	0.05	0.06	0.06	0.05	0.06	0.05	0.04	0.05	0.05	0.04	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.03	0.04	0.03

Reference List

Aberbach, J. D., & Christensen, T. (2001). Radical reform in New Zealand: crisis, windows of opportunity, and rational actors. *Public Administration, 79*(2), 403-422.

Ahmed, M. (2000). A review of natural resource valuation through national income accounting. *Economic Papers: Journal of applied economics and policy, 19*(4), 55-78.

Akhtar, S., Javed, B., Maryam, A., & Sadia, H. (2012). Relationship between financial leverage and financial performance: Evidence from fuel & energy sector of Pakistan. *European Journal of Business and Management, 4*(11), 7-17.

Aliu, N. O. (2010). Effect of capital structure on the performance of quoted manufacturing firms in Nigeria. Ahmadu Bello University, Zaria.

Ally, Z. (2013). Comparative analysis of financial performance of commercial banks in Tanzania. *Research Journal of Finance and Accounting, 4*(19), 133-143.

Almazari, A. A. (2012). Financial performance analysis of the Jordanian Arab Bank by using the Dupont system of financial analysis. *International Journal of Economics and Finance, 4*(4), 86.

Almunia, J. (2007). Measuring progress, true wealth and well being. *speech at Beyond GDP*

André, J.-P. (2011). Economic imbalances: New Zealand's structural challenge (New Zealand Treasury Working Paper No. 11/03). Retrieved on May, 11, 2016 http:treasury.govt.nz/publications/research-policy/tprp

Anielski, M. (2001). Measuring the Sustainability of Nations: The Genuine Progress Indicator System of Sustainable Well Being Accounts. Paper presented at the The Fourth Biennial Conference of the Canadian Society for Ecological Economics: Ecological Sustainability of the Global Market Place.

Arab, R. O., Seyed, S., & Azadeh, B. (2015). Financial Performance of the Steel Industry in India: A Critical Analysis. *Middle-East Journal of Scientific Research, 23*(6), 1085-1090.

Atkinson, G. (2008). Purpose and measurement of national income and product. *Journal of Economic Issues, 42*(2), 303-316.

Babalola, Y., & Abiola, F. (2013). Financial Ratio Analysis of Firms: A Tool for Decision Making. *International journal of management sciences, 1*(4), 132-137.

Baby, S. (2016). Analysis of Capital Structure in Different Industries in India. *Journal of Management in Practice, 1*(1).

Bale, M., & Dale, T. (1998). Public sector reform in New Zealand and its relevance to developing countries. *The World Bank Research Observer, 13*(1), 103-121.

Bansal, R. (2015). A Comparative Analysis of the Financial Performances of Selected Indian IT Companies during 2010-2014. *IUP Journal of Accounting Research & Audit Practices, 14*(4), 43.

Bascand, A., & Humphries, N. (1988). The post-crash economic outlook. *Reserve Bank of New Zealand Bulletin, 51*.

Baydoun, N., Maguire,W.,& Willett, R.J. (2015). Constructing simple country financial statements to assess the sustainable wealth of nations (TSBE occassional paper, University of Tasmania)

Bayliss, L. (1994). Prosperity Mislaid: Economic Failure in New Zealand and What Should Be Done About It: GP Books.

Bedford, P. (2008). The global financial crisis and its transmission to New Zealand–an external balance sheet analysis. *Reserve Bank of New Zealand Bulletin, 71*(4), 18-28.

Boarini, R., & d'Ercole, M. M. (2013). Going beyond GDP: An OECD perspective. *Fiscal Studies, 34*(3), 289-314.

Bollard, A. (2010). New Zealand's economic recovery, external vulnerabilities and the balancing act ahead. *Speech to Wellington Regional Chamber of Commerce, 14*.

Borkin, P. (2006). Past, present and future developments in New Zealand's terms of trade (New Zealand Treasury Working Paper No. 06/09). Retrieved April 10, 2016, http:// treasury.govt. nz/publications/research-policy/wp/2006/06-09/twp06-09.pdf

Bos, F. (1992). The history of national accounting. (Statistics Netherlands National accounts occasional paper No.5952). Retrieved on May 11, 2016 https://mpra.ub.uni-muenchen.de/id/eprint/5952

Bos, F. (2003). The national accounts as a tool for analysis and policy. *Past, Present and Future (Academic Thesis, University of Twente).*

Bos, F. (2006). The development of the Dutch national accounts as a tool for analysis and policy. *Statistica Neerlandica, 60*(2), 225-258.

Bos, F. (2008). Uses of national accounts; history, international standardization and applications in the Netherlands. *History, International Standardization and Applications in the Netherlands (June 30, 2008).*

Botika, M. (2012). The use of DuPont Analysis in Abnormal Returns Evaluation: Empirical Study of Romanian Market. *Procedia-Social and Behavioral Sciences, 62*, 1179-1183.

Boulhol, H., & De Serres, A. (2008). Have Developed Countries Escaped the Curse of Distance?. Retrieved 24 March 2017, http://dx.doi.org/10.2139/ssrn.1259350

Brash, D. (2001). Faster growth? If we want it. *Reserve Bank of New Zealand Bulletin, 64*.

Break, G.F. (1954). Capital maintenance and the concept of income. *Journal of Political Economy, 62(1), 48-62*

Brief, R.P.,& Peasnell,K.V. (2013). Clean surplus: Alink between accounting and finance, 2 nd ed., New York, Routledge.

Briggs, P. (2003). Looking at the numbers. A view of New Zealand's economic history. *NZ Institute of Economic Research*.

Broderick, J. (1967). National Accounts at Constant Prices. *Review of Income and Wealth, 13*(3), 247-258.

Buckle, R. A., Kim, K., Kirkham, H., McLellan, N., & Sharma, J. (2002). A structural VAR model of the New Zealand business cycle (New Zealand's Treasury working paper No 02/26). Retrieve on January 6, 2016. http://www.treasury.govt.nz/publications/research-policy/wp/2002/02-26/twp02-26.pdf

Bulin, D., & Baltatescu, I. (2015). GDP as a measure of economic growth and welfare: brief critical assessment. *National Strategies Observer No, 1*.

Carraher, S., & Van Auken, H. (2013). The use of financial statements for decision making by small firms. *Journal of Small Business & Entrepreneurship, 26*(3), 323-336.

Carroll, N. (2012). Structural change in the New Zealand economy 1974-2012. *Paper for Treasury External Long-Term Fiscal Panel, 30*.

Carson, C. S. (1975). The history of the United States national income and product account accounts; The development of an anlytical tool. *Review of Income & Wealth, 21*(2), 153-181.

Cecchetti, S. G., Mohanty, M. S., & Zampolli, F. (2011). The real effects of debt. Retrived 10 April 2016, http//www.bis.org/publ/work352.htm

Cha, M. (2013). What's missing from GDP. *The Explainer: A Demos Series*.

Chang, K. J., Chichernea, D. C., & HassabElnaby, H. R. (2014). On the DuPont analysis in the health care industry. *Journal of Accounting and Public Policy, 33*(1), 83-103.

Cheung, C. (2013). Policies to support sustainable long-term growth in New Zealand (OECD Working paper No.1076). Retrieve on 11 May, 2016 http://dx.doi.org/10.1787/5k43gjfhwvxn-en

Clarke, M., & Islam, S. (2006). National account measures and sustainability objectives: present approaches and future prospects. *Sustainable development, 14*(4), 219-233.

Cobb, C., Halstead, T., & Rowe, J. (1995). If the GDP is up, why is America down? Atlantic-Bosto-, *276*, 59-79.

Cole, R. A. (2013). What do we know about the capital structure of privately held US firms? Evidence from the surveys of small business finance. *Financial management, 42*(4), 777-813.

Conway, P., & Meehan, L. (2013). Productivity by the numbers: The New Zealand experience (New Zealand Productivity Commission Research Paper No. 2013/01. Retrieve on May 11, 2016 http://www.productivity.govt.nz/sites/default/files/NZPC-Conway-Meehan-Productivity-by-the-Numbers_0.pd

Conway, P., & Orr, A. (2000). The process of economic growth in New Zealand. *Reserve Bank of New Zealand Bulletin, 63*(1), 4-20.

Daly, H. (1977). Steady state economy. *San Francisco*.

Dalziel, P. (1999). New Zealand's Economic Reform Programme was a Failure'. *Unpublished manuscript, Christchurch*.

Dasgupta, P. (2015). Disregarded capitals: what national accounting ignores. *Accounting and Business Research, 45*(4), 447-464.

David K.D.L, Patrick, S.,& Amos , T. (1971). Foundations of Measurement, Additive and Polynomial Representations, Vol.1, New York, New York Academic Press.

Davies, M. (2015). The Future of the SNA: A Practitioner's Point of View. Paper presented at the 2015 IARIW-OECD Conference:"W (h) ither the SNA, Paris, France, April 16-17, 2015

Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of accounting and economics, 18*(1), 3-42.

Delen, D., Kuzey, C., & Uyar, A. (2013). Measuring firm performance using financial ratios: A decision tree approach. *Expert Systems with Applications, 40*(10), 3970-3983.

Den Butter, F. A. (2007). National accounts and indicators. *Measurement in Economics: A Handbook*, 189.

Deng, Y., De Zoysa, A., & Bhati, S. (2015). A Cross-Country Comparison of Performance of Chinese and Indian Automobile Companies.

Diewert, E., & Lawrence, D. (1999). Measuring New Zealand's Productivity. Retrieved on 10 May, 2016 , http://www.treasury.govt.nz/publications/research-policy/wp/1999/99-05/twp99-05

Ding, D., Schule, W., & Sun, M. Y. (2014). Cross-Country Experience in Reducing Net Foreign Liabilities: Lessons for New Zealand . International Monetary Fund

Drudy, P. (2009). Problems with Economic Growth: towards a better measure of progress? *Beyond GDP*. Retrieved on 5 March, 2016, https/www.socialjustice

Easley, D., & O'hara, M. (2004). Information and the cost of capital. *Journal of finance, 59*(4), 1553-1583.

Easton, B. (1997). In stormy seas: The post-war New Zealand economy: University of Otago Press.

Evans, L., Grimes, A., Wilkinson, B., & Teece, D. (1996). Economic reform in New Zealand 1984-95: The pursuit of efficiency. *Journal of economic Literature, 34*(4), 1856-1902.

Fairfield, P. M., & Yohn, T. L. (2001). Using asset turnover and profit margin to forecast changes in profitability. *Review of Accounting Studies, 6*(4), 371-385.

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important? *Financial management, 38*(1), 1-37.

Franklin, S. H. (1985). Cul de sac: The question of New Zealand's future: *Unwin Paperbacks*.

Galt, D. (2000). New Zealand's economic growth (New Zealand Treasury Working Paper No. 00/09) Retrieve June 10, 2016 http://www.treasury.govt.nz/publications/research-policy/wp/2000/00-09/twp00-09.pdf

Gertner, J. (2010). The Rise and Fall of the GDP. *New York Times, 13*.

Giannetti, B., Agostinho, F., Almeida, C., & Huisingh, D. (2015). A review of limitations of GDP and alternative indices to monitor human wellbeing and to manage eco-system functionality. *Journal of Cleaner Production, 87*, 11-25.

Gibbins, M., & Willett, R. J. (1997). New light on accrual, aggregation and allocation, using an axiomatic analysis of accounting numbers' fundamental and statistical character. *Abacus, 33*(2), 137-167.

Gibson, C. (2008). Financial reporting and analysis: Using financial accounting information: *Cengage Learning*.

Gorica,K., & Gumeni (2013). Towards sustainable development. Relationship between HDI and GDP per capita in Albania. *International Journal of Scientific & Engineering*

Gorter, C. N., & Shrestha, M. L. (2004). Bookkeeping conventions and the micro-macro link. *Review of Income and Wealth, 50*(2), 181-201.

Gould, J. D. (1982). The Rake's Progress?: The New Zealand Economy Since 1945: Auckland: Hodder and Stoughton.

Grant , Andrew. (1998). "New Zealand Economic Performance- A Failure to Create Wealth", Mckinsey and Company Presentation to New Zealand Treasury, (10 December 1998)

Grimes, A. (2006). A smooth ride: Terms of trade, volatility and GDP growth. *Journal of Asian Economics, 17*(4), 583-600.

Groen, J. (2016). Capital structure determinants: an inter-industry analysis for Dutch firms. University of Twente.

Group, S. W. (2011). Saving New Zealand: Reducing vulnerabilities and barriers to growth and prosperity. Retrieved on 11 June, 2016, http://www.treasury.govt.nz/publications/reviews-consultation/savingsworkinggroup/pdfs/swg-report-jan11.pdf

Gynther, R.S. (1970). Capital maintenance, price changes, and profit determination. *The Accounting Review, 45(4), 712-730*

Hamilton, K., & Dixon, J. A. (2003). Measuring the wealth of nations. *Environmental monitoring and assessment, 86*(1-2), 75-89.

Hasan, M. (2015). Financial statement analysis and performance evaluation of Farr Ceramics Limited. Retrived on 8 March, 2016 ,http://hdl.handle.net/10361/4350

Hazledine, T. (1998). "Taking New Zealand seriously: The economics of decency:" Harper Collins 1998)

Heikal, M., Khaddafi, M., & Ummah, A. (2014). Influence Analysis of Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), Debt To Equity Ratio (DER), and current ratio (CR), Against Corporate Profit Growth In Automotive In Indonesia Stock Exchange. *International Journal of Academic Research in Business and Social Sciences, 4*(12), 101.

Helfert, E. (2001). Financial Analysis Tools and Techniques: A Guide for Managers, 10th ed., New York, McGraw-Hill.

Henderson, D. (1995). The revival of economic liberalism: Australia in an international perspective. *Australian Economic Review, 28*(1), 59-85.

Heun, M. K., Carbajales-Dale, M., & Haney, B. R. (2015). *B*eyond GDP: National Accounting in the Age of Resource Depletion (Vol. 26): Springer.

Hicks, J. R. (1946). Value and Capital (2nd ed.). Oxford: Clarendon Press.

Hodgetts, B. (1989). An overview of 1988/89-the emerging recovery. *Reserve Bank of New Zealand Bulletin, 52*.

Hunt, B., & Conway, P. (1998). Productivity growth in New Zealand: economic reform and the convergence hypothesis (Reserve bank of New Zealand Discussion Paper(G98/2). Retrieve 6 February, 2016 https://ssrn.com/abstract=321396

IASB. (2010). Conceptual Framework For Financial Reporting. IFRS Foundation, London.

IASB. (2012). International Financial Reporting Standards (IFRS). IFRS Foundation, London.

IMF. (1982). Recent Economic Development In New Zealand. *International Monetary fund Report*

IMF. (2000). New Zealand: selected issues. *International Monetary Fund, Country Report, No 00/40*

IMF. (2011). NewZealand : selected issues. *International Monetary Fund Staff Report, (11/102)*.

IMF. (2012). NewZealand : selected issues. *International Monetary Fund Staff Report (12/131)*.

Jan, S. (2016). Financial Statements Analysis of Idea Cellular & Reliance Telecommunications: A Comparative Study. *Imperial Journal of Interdisciplinary Research, 2*(7).

Jensen, M. C. (1986). Agency cost of free cash flow, corporate finance, and takeovers. *The American Economic Review, 76*(2).

Jewell, J. J., & Mankin, J. A. (2011). What is your ROA? An investigation of the many formulas for calculating return on assets. *Academy of Educational Leadership Journal, 15*, 79-91.

Jones, R. (2003). Measuring and reporting the nation's finances: Statistics and accounting. *Public Money & Management, 23*(1), 21-28.

Jorgenson, D. W., & Landefeld, J. S. (2009). Implementation of a new architecture for the US national accounts. *The American Economic Review*, 64-68.

Jorgenson, D. W., & Schreyer, P. (2013). Industry-Level Productivity Measurement and the 2008 System of National Accounts. *Review of Income and Wealth, 59*(2), 185-211.

Kabajeh, M. A. M., Al Nuaimat, S., & Dahmash, F. N. (2012). The relationship between the ROA, ROE and ROI ratios with Jordanian insurance public companies market share prices. *International Journal of Humanities and Social Science, 2*(11), 115-120.

Karagedikli, O., & Price, G. (2012). Identifying terms of trade shocks and their transmission to the new zealand economy. Paper presented at the New Zealand association of economists conference., New Zealand Association of Economists.

Kasilingam, R., & Jayabal, G. (2012). Profitability and Solvency Analysis of A Manufacturing Company using Dupont and Altman Model. *BVIMR Management Edge, 5*(2).

Kehoe, T. J., & Ruhl, K. J. (2003). Recent great depressions: Aggregate growth in New Zealand and Switzerland, 1973–2000. *New Zealand Economic Papers, 37*(1), 5-40.

Kelsey, J. (2015). The New Zealand experiment: A world model for structural adjustment? : Bridget Williams Books.

Kendrick, J. W. (1970). The historical development of national-income accounts. *History of Political Economy*, *2*(2), 284-315.

Kendrick, J.W. (1972). Economic Accounts and their Uses. New York, McGraw Hill.

Kendrick, J. W. (2012). The new system of national accounts (Vol. 47): *Springer Science & Business Media*.

Keuning, S. J., & Van Tongeren, D. (2004). The relationship between government accounts and national accounts, with special reference to the Netherlands. *Review of Income and Wealth, 50*(2), 167-179.

Keynes, J. M. (1936). The General Theory of Employment, Interest and Money. London, R,&R Clark Limited.

Kijewska, A. (2016). Determinants of the return on equity ratio (ROE) on the example of companies from metallurgy and mining sector in Poland. *Metalurgija, 55*(2), 285-288.

Kilani, K. A. (1988). The evolution and status of accounting in Libya. University of Hull.

Kircher, P. (1953). Accounting entries and national accounts. *Accounting Review*, 191-199.

Kusi, B. A., Ansah-Adu, K., & Agyei, A. (2015). Evaluating Banking Profit Performance in Ghana during and post Profit Decline: A five Step Du-Pont Approach. *Emerging Markets Journal, 5*(2), 29.

Lakshan, A., & Wijekoon, W. (2013). The use of financial ratios in predicting corporate failure in Sri Lanka. *GSTF Business Review (GBR), 2*(4), 37.

Lande, E. (2000). Macro-accounting and Micro-accounting Relationships in France. *Financial Accountability & Management, 16*(2), 151-165.

Landefeld, J. S., Moulton, B. R., Platt, J. D., & Villones, S. M. (2010). GDP and Beyond: measuring economic progress and sustainability. *Survey of Current Business, 90*(4), 12-25.

Lane, P. R., & Milesi-Ferretti, G. M. (2007). The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004. *Journal of international Economics, 73*(2), 223-250.

Lange, G.M. (2013). Natural capital, total wealth and sustainable development in Namibia *Implementing Environmental Accounts* (pp. 1-23)*: Springer.*

Lattimore, R., & Eaqub, S. (2013). The New Zealand economy: an introduction: Auckland University Press.

Lattimore, R., Le, T., Claus, I., & Stroombergen, A. (2009). Economic progress and puzzles: Long-term structural change in the New Zealand economy, 1953-2006 (New Zealand Institute of Economic Research Working paper 2009/6). Retrieve 11 May, 2016 http://saber.eaber.org/node/23006

Liesz, T. J. (2002). Really modified Du Pont analysis: Five ways to improve return on equity. Retrieve on 2 June, 2016 , http// www.sbaer.uca.edu

Little, P., Mortimer, W., Keene, M., & Henderson, L. (2009). Evaluating the effect of recession on retail firms' strategy using DuPont method,". *Journal of Financial and Quantitative analysis, 38*(1), 1-36.

Looughlin, C. O. (1971). National Economic Accounting. New York, Pergamon Press.

Luu, C. (2015). Sustaining the economic expansion in New Zealand. *OECD Economic Department Working Papers(1247).*

Lynch, R. (2015). *T*he System of National Accounts–Staying on Track. Paper presented at the 2015 IARIW-OECD Conference:"W (h) ither the SNA, Paris, France, April 16-17, 2015

Makin, A. J., Zhang, W., & Scobie, G. M. (2009). The contribution of foreign borrowing to the New Zealand economy. *New Zealand Economic Paper, 43*(3), 263-278.

Mäler, K.G. (1991). National accounts and environmental resources. *Environmental and Resource economics, 1*(1), 1-15.

Masoud, U. M. A., & Badugu, D. (2015). Financial Statement Analysis of National Bank for Agriculture and Rural Development (NABARD). *Int. J. of Multidisciplinary and Current research, 3*.

Matthew, D. A. A., Fada, A., & Ukonu, I. C. (2016). Role of financial ratio analysis in assessing business performance in the hospitality and tourism operations. *Development, 4*(4).

Mawson, P. (2002). Measuring economic growth in New Zealand (*New Zealand Treasury Working Paper No. 02/14.*

McConnell, J. J., & Servaes, H. (1995). Equity ownership and the two faces of debt. *Journal of financial economics, 39*(1), 131-157.

McDonalds, K. (2000). Slip Sliding Away : A Critical View of New Zealand's Economic Policies and Long Term Performance, NZIER, Wellington

Michael, R., & Sleeman, C. (2008). Some perspective on past recessions. *Reserve Bank of New Zealand Bulletin*, 21.

Mishan, E. J., & Mishan, E. J. (1967). The costs of economic growth: Staples Press London.

Mitchell, R. K., Busenitz, L. W., Bird, B., Marie Gaglio, C., McMullen, J. S., Morse, E. A., & Smith, J. B. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice, 31*(1), 1-27.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, 261-297.

Moulton, B. R. (2004). The system of national accounts for the new economy: What should change? *Review of Income & Wealth, 50*(2), 261-278. doi:10.1111/j.0034-6586.2004.00125.x

Myers, S. C. (1984). The capital structure puzzle. *Journal of finance, 39*(3), 574-592.

Nahar, S., & Inder, B. (2002). Testing convergence in economic growth for OECD countries. *Applied Economics, 34*(16), 2011-2022.

Naim Nasimi, R. (2016). Determinants of Capital Structure (An Empirical Evidence, US). *Global Journal of Management and Business Research, 16*(4).

Naseem, M. A., Malik, F., & Zhang, H. (2017). Capital Structure and Corporate Governance. *Journal of Developing Areas, 51*(1).

Nassimbene, R. (1954). The Use of Double-Entry Accounting in National Income Accounts. *Accounting Review*, 74-83.

New Zealand Treasury (2004). New Zealand Economic Growth: An Analysis of Performance and Policy. New Zealand Treasury Working

New Zealand Treasury (2006). New Zealand economic and financial overview 2008. New Zealand Treasury, Wellington, New Zealand.

New Zealand Treasury (2012). Economic and Financial overview 2012. New Zealand Treasury, Wellington, New Zealand

New Zealand Treasury (2014). Holding on and letting go: Opportunities and challenges for New Zealand's economic performance. Retrieve from http://purl.oclc.org/nzt/big-1691

Nordhaus, W. D. (1995). How should we measure sustainable income? *Cowles Foundation Discussion Paper NO. 1101*

Nordhaus, W. D., & Tobin, J. (1972). Is growth obsolete? *Economic Research: Retrospect and Prospect, Volume 5, Economic Growth* (pp. 1-80): Nber.

NZIER. (2000). New Zealand's economic growth, why has it been low? (New Zealand Institute of Economic Research Working Paper No. 01/02). Retrieve June 5, 2016 https://nzier.org.nz/static/media/filer_public/6d/63/6d63563a-7a9a-4813-ad7d-cbeaabbe3d2b/wp2001-02_new_zealands_economic_growth_-_why_has_it_been_so_low.pdf

Obst, C., & Vardon, M. (2014). Recording environmental assets in the national accounts. *Oxford Review of Economic Policy, 30*(1), 126-144.

OECD. (1975). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1975).*

OECD. (1976). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1976)*

OECD. (1977). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1977)*

OECD. (1979). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1979)*

OECD. (1980). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1980)*

OECD. (1981). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1981)*

OECD. (1983). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1983)*

OECD. (1985). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1985)*

OECD. (1989). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1985)*

OECD. (1990). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1990)*

OECD. (1993). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1993)*

OECD. (1994). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1994)*

OECD. (1996). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1996)*

OECD. (1999). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (1999)*

OECD. (2000). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (2000)*

OECD. (2002). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (2002)*

OECD. (2004). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (2004)*

OECD. (2008). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (2008)*

OECD. (2011). Economic Surveys New Zealand. *Organisation for Economic Co-operation and Development, Country Report (2011)*

Office of National Statistics. (2012). The National Balance Sheet 2012 Results. National Statistics, UK

Ongore, V. O., & Kusa, G. B. (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues, 3*(1), 237.

Padake, V., & Soni, R. (2015). Measurement of Efficiency of Top 12 Banks in India Using DuPont Analysis. *IUP Journal of Bank Management, 14*(4), 59.

Patel, V. S., & Mehta, C. B. (2012). A Financial Ratio Analysis of Krishak Bharati Co-operative Limited. *International Journal of Marketing, Financial Services and Management Research, 1*(10), 186-199.

Philpott, B. (1991). "Economic Growth in New Zealand, 1950–1995: Models and Experience", New Zealand Association of Economists, Wellington (1991)

Quigley, D. (1996). Economic reform: New Zealand in an international perspective. *The Round Table, 85*(339), 309-321.

Radermacher, W. J. (2015). Recent and Future Developments Related to "Gdp and Beyond". *Review of Income and Wealth, 61*(1), 18-24.

Raza, S. A., Jawaid, S. T., & Adnan, M. (2013). A DuPont Analysis on Insurance Sector of South Asian Region**.** https://mpra.ub.uni-muenchen.de/49289/

Reichmann, W. (2015). National Account Systems.

Repetto, R. (1992). Earth in the balance sheet: Incorporating natural resources in national income accounts. *Environment: Science and Policy for Sustainable Development, 34*(7), 12-45.

Repetto, R., Magrath, W., Wells, M., Beer, C., & Rossini, F. (1989). Wasting assets: natural resources in the national income accounts. World Resource Institute, Center for Policy Research

Richter, J. (1994). Use and misuse of national accounts from a modeling perspective. *Review of Income & Wealth, 40*(1), 99-110.

Ruggles, N. D. (1987). Financial Accounts and Balance sheets: Issues for the revision of SNA. *Review of Income & Wealth, 33*(1), 39-62.

Ruggles, R. (1970). The Design of Economic Accounts. New York,: National Bureau of Economic Research.

Saxena, V. (2016). Accounting Ratios as an Importnt Tool To Financial Statement Analysis. *Global Journal For Research Analysis, 4*(10).

Schule, W. (2010). The potential contribution of fiscal policy to rebalancing and growth in New Zealand. *International Monetary Fund Working Paper 10/128*.

Scott, B., Eugene, B., Darren, H., & Taiji, W. (2013). Corporate finance, the essentials , Australia Engage learning.

Scott, M. G. C. (1996). Government Reform in New Zealan. *International Monetary Fund occasional Paper No 140*

Selling, T. I., & Stickney, C. P. (1989). The effects of business environment and strategy on a firm's rate of return on assets. *Financial Analysts Journal, 45*(1), 43-52.

Sen, A. (1976). Real national income. *The Review of Economic Studies, 43*(1), 19-39.

Sen, A. (1979). The welfare basis of real income comparisons: A survey. *Journal of economic Literature, 17*(1), 1-45.

Shah Fasih Ur Rehman, S. (2013). Relationship between financial leverage and financial performance: Empirical evidence of listed sugar companies of Pakistan. *Global Journal of Management and Business Research, 13*(8).

Sheela, S. C., & Karthikeyan, K. (2012). Financial performance of pharmaceutical industry in India using dupont analysis. *European Journal of Business and Management, 4*(14), 84-91.

Silverstone, B., Bollard, A., & Lattimore, R. G. (1996). A study of economic reform: The case of New Zealand (Vol. 236): North-Holland.

Skilling, D. (2001). Comparative disadvantage: NZ's economic growth in historical perspective. NZ Treasury, http://www. treasury. govt. nz/et/et-compar-sep01. pdf.

Smith, R., & Grimes, A. (1990). Sources of economic growth. *Reserve Bank of New Zealand Bulletin, 140-148*

Soliman, M. T. (2008). The use of DuPont analysis by market participants. *The Accounting Review, 83*(3), 823-853.

Statistics New Zealand (2012). National Accounts (Income and Expenditure): Year ended March 2012. http://www.stats.govt.nz

Statistics New Zealand (2014). National Accounts (Income and Expenditure): Year ended March 2014 – Summary analysis tables (corrected) . http://www.stats.govt.nz

Stanton, D. J., & Stanton, P. A. (1998). Reconciling Governmental Accounting with National Accounting: *Citeseer*.

Steenkamp, D. (2010). New Zealand's imbalances in a cross-country context. *Reserve Bank of New Zealand Bulletin, 73*(4), 34-46.

SteenKamp, D. (2014). How Volatile are the New Zealand's terms of trade? An international comparison. *Reserve Bank of New Zealand Bulletin, 2014*

Stephanie H.McCulla, K. E. M., Brent R.Moulten. (2015). The National Income and Product Accounts and the System of National Accountss 2008. *Survey of Current Business*.

Steve, L., & Chris, J. (2003). Corporate Finance: Theory and Practice (7 ed.). Croatia: ZRINSKI.

Stiglitz, J. E., & Charlton, A. (2005). Fair trade for all: how trade can promote development. New York.

Stiglitz, J. E., Sen, A., & Fitoussi, J.P. (2009). Report by the commission on the measurement of economic performance and social progress. Retrieved 10 May, 2016 http//stiglitz.sen.fitoussi.fr

Sunga, P. S. (1988). Conceptual Incongruity in the National Accounts. *Review of Income & Wealth, 34*(4), 393-409.

Syrquin, M. (2011). GDP as a measure of economic welfare. https://ssrn.com/abstract=1808685

Tarantino, D. P. (2001). Understanding Financial Statements. *Physician Executive,* 2001 Sep-Oct; Vol. 27 (5), pp. 72-6.

Tily, G. (2009). John Maynard Keynes and the development od national accounts in Britain, 1895–1941. *Review of Income & Wealth, 55*(2), 331-359. doi:10.1111/j.1471-8847.2009.00322.

UN. (1993). System of National Accounts. United Nations Publications, New York Washington.

UN. (2000). Links Between Business Accounting and National Accounting, Studies in Methods, Handbook of National Accounting , series F, no. 76, Statistics Division, Department of Economics and Social Affairs, New York

U N. (2003). National Accounts: A practical introduction , Studies in Methods series F, no.85

U N. (2008). The systerm of National Accounts, United Nations Publications, New York.

U N. (2015). Financial Production, Flows and Stocks in the System of National Accounts, Studies in Methods, Handbook of National Accounting , series F, no. 113, Statistics Division, Department of Economics and Social Affairs, New York

UNEP, U. (2012). Inclusive wealth report 2012. New York, Cambridge University Press.

Utsunomiya, K. (2003). Fair value accounting and the SNA. *Hitotsubashi Journal of Economics*, 37-47.

Vaghefi, N., Siwar, C., & Aziz, S. A. A. G. (2015). Green GDP and Sustainable Development in Malaysia. *Current World Environment, 10*(1), 1.

Van Auken, H., & Yang, K. (2014). Chinese SMEs' Uses of Financial Statements in Decision Making . *Journal of Developmental Entrepreneurship, 19*(04), 1450027.

Van den Bergh, J. C. (2009). The GDP paradox. *Journal of Economic Psychology, 30*(2), 117-135.

Van Tongeren, J. W. (1979). "A review of selected aspects of the United Nations System of National Accounts in the light of countries experiences". *Review of Income & Wealth, 25*(2), 167-194.

Vanoli, A. (2005). A history of national accounting: IOS press.

Wesselink, B., Bakkes, J., Best, A., Hinterberger, F., & ten Brink, P. (2007). Measurement beyond GDP. *Beyond GDP*, 304.

Willett, R.J. (1987). An axiomatic theory of accounting measurement. *Accounting and Business Research, 17*(66), 155-171.

Willett, R. J (1988). An Axiomatic Theory of Accounting Measurement--Part II. *Accounting & Business Research (Wolters Kluwer UK), 19*(73), 79-91.

Willett, R.J. (1991). An Axiomatic Theory of Accounting Measurement Structures. *IMA Journal of Management Mathematics, 3*(1), 45-59. doi:10.1093/imaman/3.1.45

Wright, J. (1989). Natural resource accounting: a technique for improving planning in New Zealand? : Lincoln University and University of Canterbury. Centre for Resource Management.

Yu, S. C. (1957). Macroaccounting and some of its basic problems. *Accounting Review*, 264-272.

Yu, S. C. (1959). National Position Statement: A Proposal on operational Principles and Process. *Accounting Review, 34*(1), 74.

Yu, S. C. (1966). Microaccounting and Macroaccounting. *Accounting Review, 41*(1), 8-20.

Zelgalve, E., Sproge, I., & Berzkalne, I (2014). Profitability assessment of Latvian Companies: Emphasis on ROE. Journal of Applied Economics and Business